2006-08 ENGINE PERFORMANCE

Fuel Supply System - Civic GX

COMPONENT LOCATION INDEX

NOTE: Refer to the FUEL SUPPLY SYSTEM (R18A1) (EXCEPT HYBRID) article for additional information that is not shown in this article.

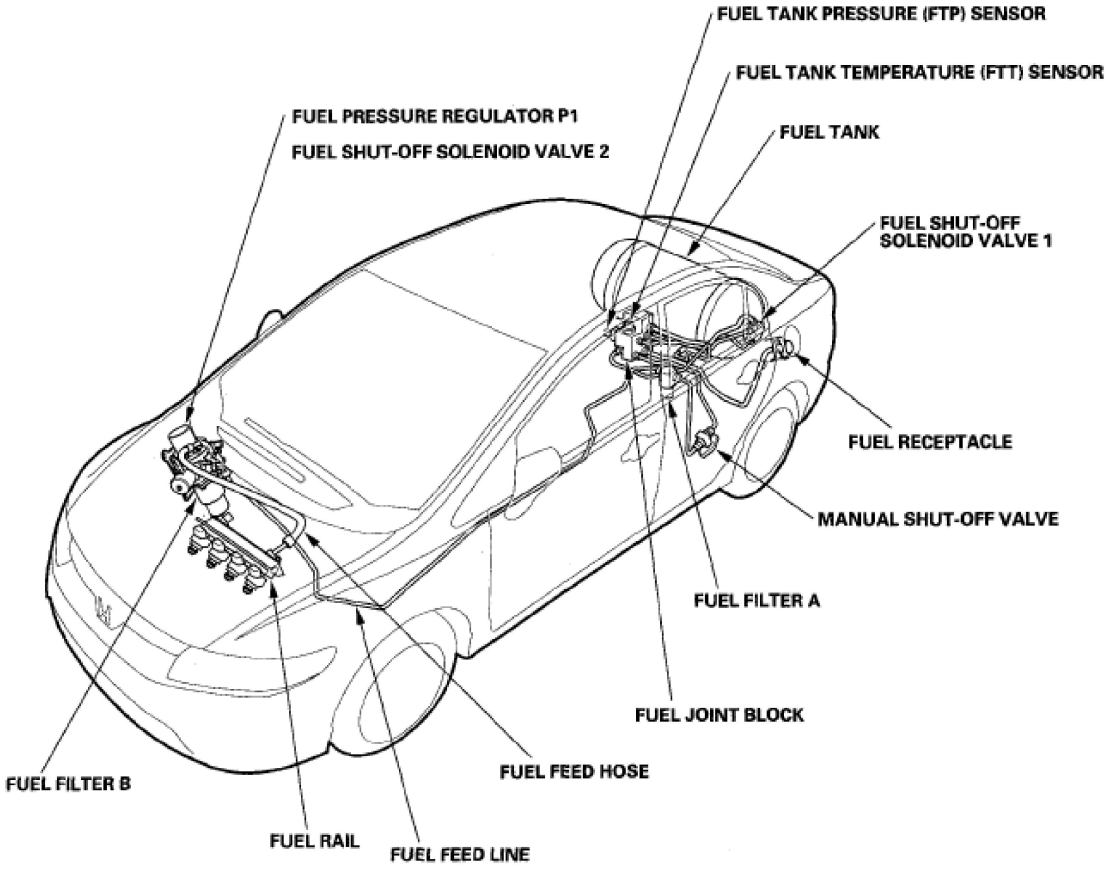


Fig. 1: Identifying Fuel Supply System Components (1 Of 2)

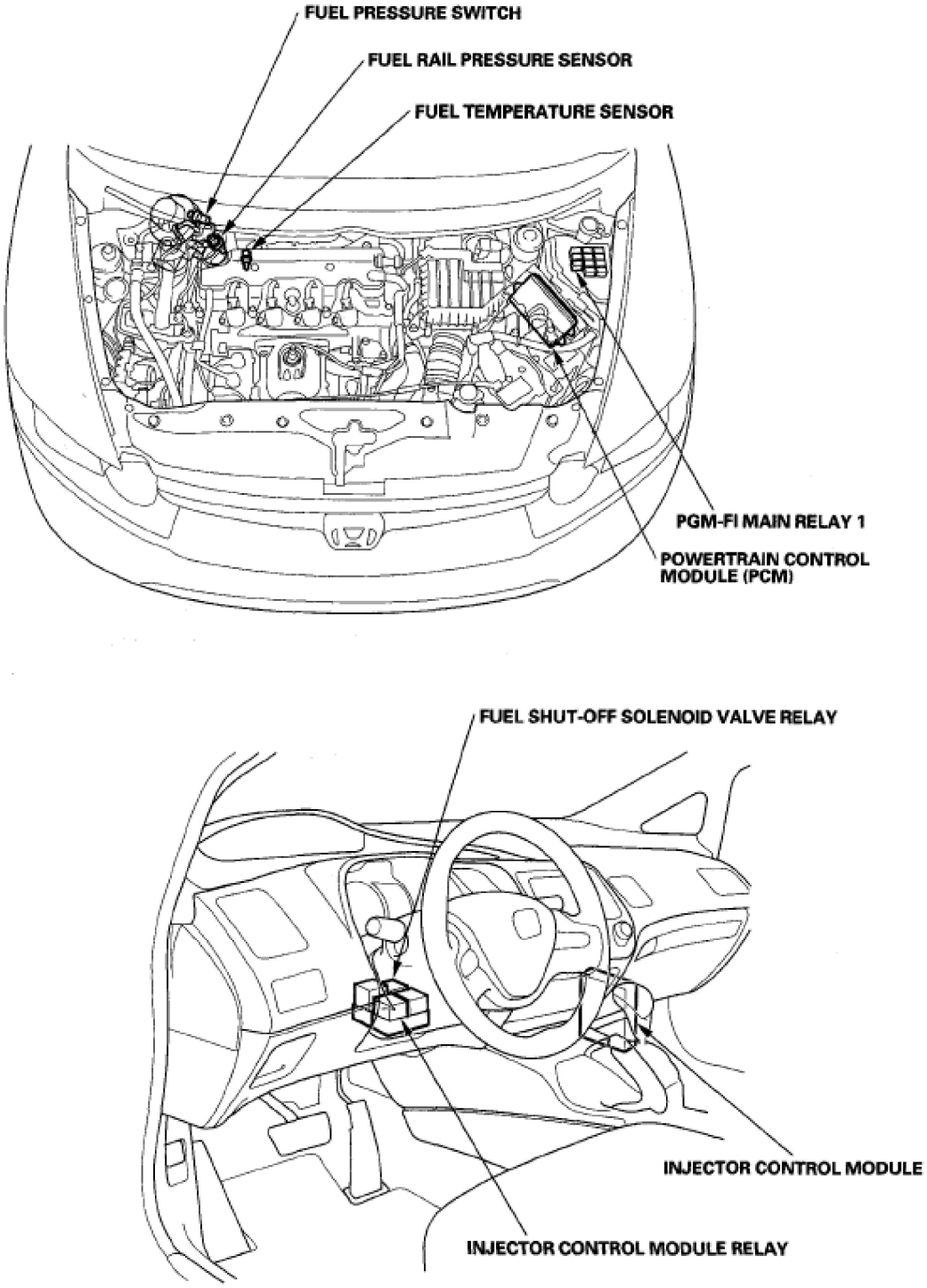


Fig. 2: Identifying Fuel Supply System Components (2 Of 2)

DTC TROUBLESHOOTING

DTC P0181: FUEL TEMPERATURE SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Note the ambient temperature.
3. Check the IAT SENSOR in the DATA LIST with the HDS.
4. Compare the value of the IAT SENSOR and the ambient temperature.

   Is the value of the IAT SENSOR and the ambient temperature same?

   YES -Go to step 5.

   NO -Allow the IAT SENSOR to cool to ambient temperature, then go to step 5.

5. Note the value of the FUEL TEMPERATURE SENSOR in the DATA LIST with the HDS.
6. Compare the value of the IAT SENSOR and the value of the FUEL TEMPERATURE SENSOR.

   Does the value of the FUEL TEMPERATURE SENSOR differ 45 °F (25 °C) or more?

   YES -Go to step 7.

   NO -Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the fuel temperature sensor and the PCM.

7. Replace the fuel temperature sensor (see **FUEL TEMPERATURE SENSOR REPLACEMENT**).
8. Reset the PCM with the HDS.
9. Do the PCM idle learn procedure, refer to the **ECM/PCM IDLE LEARN PROCEDURE** .
10. Allow the IAT SENSOR to cool to ambient temperature.

11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
12. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0181 indicated?

    YES -Check for poor connections or loose terminals at the fuel temperature sensor and the PCM, then go to step 1.

    NO -Go to step 13.

13. Monitor the OBD STATUS for DTC P0181 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES -Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 12, go to the indicated DTC's troubleshooting.

    NO -If the screen indicates FAILED, check for poor connections or loose terminals at the fuel temperature sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 10.

DTC P0182: FUEL TEMPERATURE SENSOR CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check the FUEL TEMPERATURE SENSOR in the DATA LIST with the HDS.

   Is about 356 °F (180 °C) or more, or 0.08 V or less indicated?

   YES -Go to step 3.

NO -Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the fuel temperature sensor and the PCM.

3. Turn the ignition switch OFF.
4. Disconnect the fuel temperature sensor 2P connector.
5. Turn the ignition switch ON (II).
6. Check the FUEL TEMPERATURE SENSOR in the DATA LIST with the HDS.

   Is about 356 °F (180 °C) or more, or 0.08 V or less indicated?

   YES -Go to step 7.

   NO -Go to step 11 11.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector B (44P).
10. Check for continuity between fuel temperature sensor 2P connector terminal No. 2 and body ground.

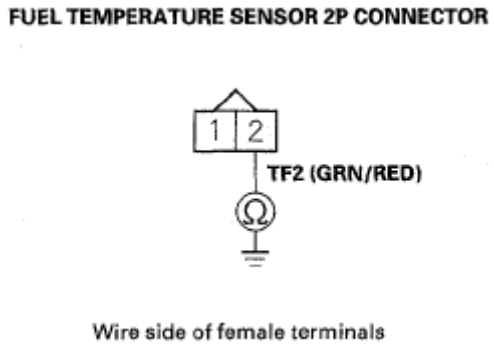


Fig. 3: Checking Continuity Between Fuel Temperature Sensor 2P Connector Terminal No. 2 And Body Ground

Is there continuity?

YES -Repair short in the wire between the PCM (B5) and the fuel temperature sensor, then go to step 13.

NO -Go to step 18.

11. Turn the ignition switch OFF.
12. Replace the fuel temperature sensor (see **FUEL TEMPERATURE SENSOR REPLACEMENT**).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure, refer to the **ECM/PCM IDLE LEARN PROCEDURE** .
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0182 indicated?

    YES -Check for poor connections or loose terminals at the fuel temperature sensor and the PCM, then go to step 1.

    NO -Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

18. Reconnect all connectors.
19. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0182 indicated?

    YES -Check for poor connections or loose terminals at the fuel temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then recheck. If the PCM was substituted, go to step 1.

    NO -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM, refer to the **ECM/PCM REPLACEMENT** . If any other Temporary DTCs or DTCs are indicated, go

to the indicated DTC's troubleshooting.

DTC P0183: FUEL TEMPERATURE SENSOR CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check the FUEL TEMPERATURE SENSOR in the DATA LIST with the HDS.

   Is about - 40°F (-40°C) or less, or 4.92 V or more indicated?

   YES -Go to step 3.

   NO -Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the fuel temperature sensor and the PCM.

3. Turn the ignition switch OFF.
4. Disconnect the fuel temperature sensor 2P connector.
5. Connect fuel temperature sensor 2P connector terminals No. 1 and No. 2 with a jumper wire.

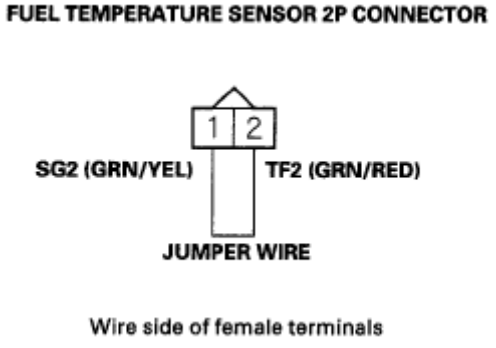


Fig. 4: Connecting Fuel Temperature Sensor 2P Connector Terminals No. 1 And 2 With Jumper Wire

6. Turn the ignition switch ON (II).

7. Check the FUEL TEMPERATURE SENSOR in the DATA LIST with the HDS.

   Is about -40°F (-40 °C) or less, or 4.92 V or more indicated?

   YES -Go to step 8.

   NO -Go to step 11 20.

8. Turn the ignition switch OFF.
9. Remove the jumper wire from the fuel temperature sensor 2P connector.
10. Turn the ignition switch ON (II).
11. Measure voltage between fuel temperature sensor 2P connector terminal No. 2 and body ground.

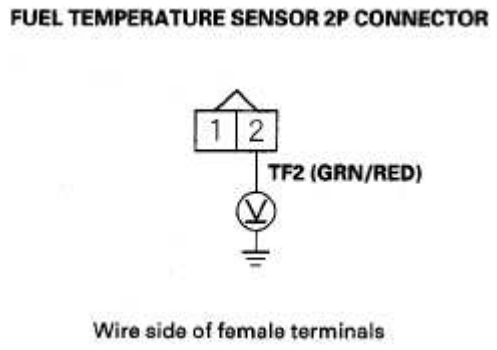


Fig. 5: Measuring Voltage Between Fuel Temperature Sensor 2P Connector Terminal No. 2 And Body Ground

   Is there about 5 V?

   YES -Go to step 12.

   NO -Go to step 16.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector B (44P).
15. Check for continuity between fuel temperature sensor 2P connector terminal

No. 1 and PCM connector terminal B33.

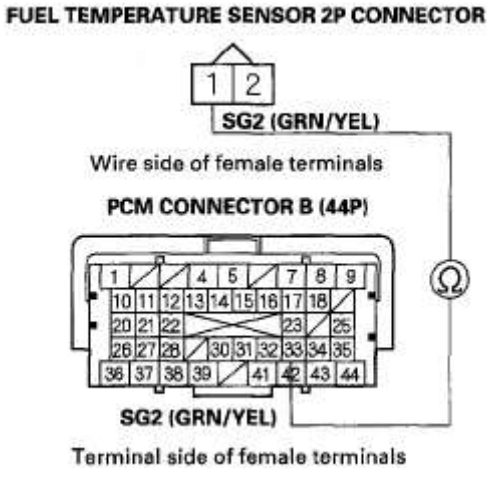

FUEL TEMPERATURE SENSOR 2P CONNECTOR
1 2
SG2 (GRN/YEL)
Wire side of female terminals
PCM CONNECTOR B (44P)
1 4 5 7 8 9
10 11 12 13 14 15 16 17 18
20 21 22 23 25
26 27 28 30 31 32 33 34 35
36 37 38 39 41 42 43 44
SG2 (GRN/YEL)
Terminal side of female terminals

Fig. 6: Checking Continuity Between Fuel Temperature Sensor 2P Connector Terminals

Is there continuity?

YES -Go to step 27.

NO -Repair open in the wire between the PCM (B33) and the fuel temperature sensor, then go to step 22.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector B (44P).
19. Check for continuity between fuel temperature sensor 2P connector terminal No. 2 and PCM connector terminal B5.

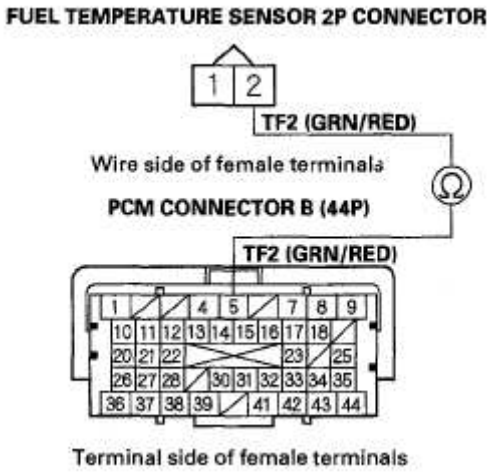

FUEL TEMPERATURE SENSOR 2P CONNECTOR
1
2
TF2 (GRN/RED)
Wire side of female terminals
PCM CONNECTOR B (44P)
TF2 (GRN/RED)
1 4 5 7 8 9
10 11 12 13 14 15 16 17 18
20 21 22 23 25
26 27 28 30 31 32 33 34 35
36 37 38 39 41 42 43 44
Terminal side of female terminals

Fig. 7: Checking Continuity Between Fuel Temperature Sensor 2P Connector Terminals

Is there continuity?

YES -Go to step 27.

NO -Repair open in the wire between the PCM (B5) and the fuel temperature sensor, then go to step 22.

20. Turn the ignition switch OFF.
21. Replace the fuel temperature sensor (see **FUEL TEMPERATURE SENSOR REPLACEMENT**).
22. Reconnect all connectors.
23. Turn the ignition switch ON (II).
24. Reset the PCM with the HDS.
25. Do the PCM idle learn procedure, refer to the **ECM/PCM IDLE LEARN PROCEDURE** .
26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0183 indicated?

YES -Check for poor connections or loose terminals at the fuel temperature sensor and the PCM, then go to step 1.

NO -Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

27. Reconnect all connectors.
28. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0183 indicated?

    YES -Check for poor connections or loose terminals at the fuel temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then recheck. If the PCM was substituted, go to step 1.

    NO -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM, refer to the **ECM/PCM REPLACEMENT** . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0191: FUEL RAIL PRESSURE SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch OFF.
2. Check for a loose or damaged fuel pressure regulator P1 vacuum line.

   Is the line OK?

   YES -Go to step 3.

   NO -Reconnect or repair the fuel pressure regulator P1 vacuum line, then go to step 21.

3. Check the fuel system for any leaking parts (see **LEAK INSPECTION**).

   Are any parts leaking?

   YES -Replace the leaking part(s), then go to step 21.

   NO -Go to step 4.

4. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
5. Test-drive the vehicle for several minutes in the range of these recorded on-board snapshot parameters:
   - ENGINE SPEED
   - MAP SENSOR
6. Monitor the OBD STATUS for DTC P0191 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES -Go to step 7.

   NO -If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the fuel rail pressure sensor and the PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 4 and recheck.

7. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
8. Snap the throttle to an engine speed of 3,000 rpm or more.
9. Check the FUEL RAIL PRESSURE SENSOR in the DATA LIST with the HDS while snapping the throttle.

   Does the reading change 4 kPa (0.58 psi, 0.04 kgf/cm^2) or more?

   YES -Go to step 10.

NO -Replace the fuel rail pressure sensor (see **FUEL PRESSURE SWITCH REPLACEMENT**), then go to step 19.

10. Check the FUEL RAIL PRESSURE SENSOR in the DATA LIST with the HDS at idle.

    Is about 204-326 kPa (29.58-47.3 psi, 2.08-3.32 kgf/cm^2) indicated?

    YES -Go to step 16.

    NO -Go to step 11.

11. Turn the ignition switch OFF.
12. Remove the fuel rail pressure sensor (see **FUEL PRESSURE SWITCH REPLACEMENT**).
13. Reconnect the fuel rail pressure sensor 3P connector to the sensor.
14. Turn the ignition switch ON (II).
15. Compare the value of the BARO SENSOR and the FUEL RAIL PRESSURE SENSOR in the DATA LIST with the HDS.

    Does the reading differ 22.3 kPa (3.23 psi, 0.23 kgf/cm^2) or more?

    YES -Replace the fuel rail pressure sensor (see **FUEL PRESSURE SWITCH REPLACEMENT**), then go to step 19.

    NO -Replace the fuel pressure regulator P1 (see **FUEL PRESSURE REGULATOR P1 REPLACEMENT**), then go to step 19.

16. Check the MAP SENSOR in the DATA LIST with the HDS.

    Is about 53.2 kPa (15.7 in.Hg, 399 mmHg), or 1.59 V or more indicated?

    YES -Go to step 17.

    NO -Replace the MAP sensor, refer to the **MAP SENSOR REPLACEMENT** , then go to step 19.

17. Start the engine.
18. Check the MAP SENSOR in the DATA LIST with the HDS while snapping the throttle to fuel cut engine speed.

    Is about 36.9 kPa (10.9 in.Hg, 277 mmHg), or 1.51 V or less indicated?

    YES -Check for poor connections or loose terminals at the fuel rail pressure sensor and the PCM. Also check for a loose or damage fuel pressure regulator P1 vacuum line. Then go to step 19.

    NO -Replace the MAP sensor, refer to the **MAP SENSOR REPLACEMENT** , then go to step 19.

19. Turn the ignition switch OFF.
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the PCM with the HDS.
23. Do the PCM idle learn procedure, refer to the **ECM/PCM IDLE LEARN PROCEDURE** .
24. Test-drive the vehicle for several minutes in the range of these recorded on-board snapshot parameters:
    - ENGINE SPEED
    - MAP SENSOR
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0191 indicated?

    YES -Check for poor connections or loose terminals at the fuel rail pressure sensor and the PCM, then go to step 1.

    NO -Go to step 26.

26. Monitor the OBD STATUS for DTC P0191 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES -Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting.

NO -If the screen indicates FAILED, check for poor connections or loose terminals at the fuel rail pressure sensor and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 23.

DTC P0192: FUEL RAIL PRESSURE SENSOR CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check the FUEL RAIL PRESSURE SENSOR in the DATA LIST with the HDS.

   Is there about 0.23 V or less?

   YES -Go to step 3.

   NO -Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the fuel rail pressure sensor and the PCM.

3. Turn the ignition switch OFF.
4. Disconnect the fuel rail pressure sensor 3P connector.
5. Turn the ignition switch ON (II).
6. Check the FUEL RAIL PRESSURE SENSOR in the DATA LIST with the HDS.

   Is there about 0.23 V or less?

   YES -Go to step 8.

NO -Go to step 7.

7. Measure voltage between fuel rail pressure sensor 3P connector terminals No. 1 and No. 3.

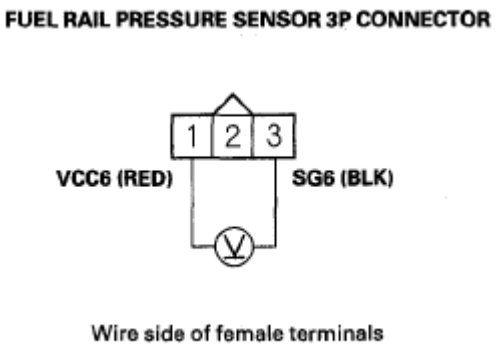


Fig. 8: Measuring Voltage Between Fuel Rail Pressure Sensor 3P Connector Terminals No. 1 And 3

Is there about 5 V?

YES -Go to step 16.

NO -Go to step 12.

8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector C (44P).
11. Check for continuity between fuel rail pressure sensor 3P connector terminal No. 2 and body ground.

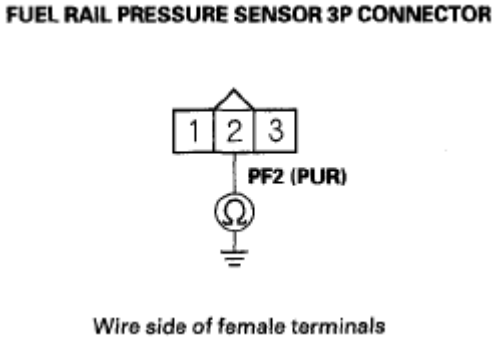


Fig. 9: Checking Continuity Between Fuel Rail Pressure Sensor 3P Connector Terminals

Is there continuity?

YES -Repair short in the wire between the PCM (C10) and the fuel rail pressure sensor, then go to step 18.

NO -Go to step 23.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector A (44P).
15. Check for continuity between fuel rail pressure sensor 3P connector terminal No. 1 and PCM connector terminal A19.

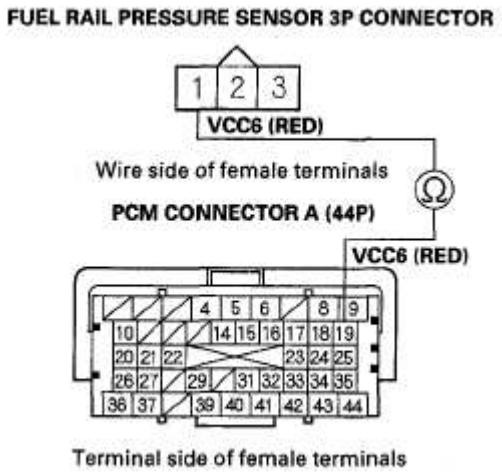

FUEL RAIL PRESSURE SENSOR 3P CONNECTOR
1 2 3
VCC6 (RED)
Wire side of female terminals
PCM CONNECTOR A (44P)
VCC6 (RED)
4 5 6 8 9
10 14 15 16 17 18 19
20 21 22 23 24 25
26 27 29 31 32 33 34 35
36 37 39 40 41 42 43 44
Terminal side of female terminals

Fig. 10: Checking Continuity Between Fuel Rail Pressure Sensor 3P Connector Terminals

Is there continuity?

YES -Repair open in the wire between the PCM (A19) and the fuel rail pressure sensor, then go to step 18.

NO -Go to step 23.

16. Turn the ignition switch OFF.
17. Replace the fuel rail pressure sensor (see **FUEL PRESSURE SWITCH REPLACEMENT**).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the PCM with the HDS.
21. Do the PCM idle learn procedure, refer to the **ECM/PCM IDLE LEARN PROCEDURE** .
22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0192 indicated?

    YES -Check for poor connections or loose terminals at the fuel rail pressure sensor and the PCM, then go to step 1.

    NO -Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

23. Reconnect all connectors.
24. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0192 indicated?

    YES -Check for poor connections or loose terminals at the fuel rail pressure sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then recheck. If the PCM was substituted, go to step 1.

    NO -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM, refer to the **ECM/PCM REPLACEMENT** . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0193: FUEL RAIL PRESSURE SENSOR CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check the FUEL RAIL PRESSURE SENSOR in the DATA LIST with the HDS.

   Is there about 4.77 V or more?

   YES -Go to step 3.

   NO -Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the fuel rail pressure sensor and the PCM.

3. Try to start the engine when the ambient temperature is 32 °F (0 °C) or more.

   Does the engine start?

   YES -Go to step 8.

   NO -Go to step 4.

4. Turn the ignition switch OFF.
5. Disconnect the fuel pressure regulator switch 2P connector (see **FUEL PRESSURE SWITCH REPLACEMENT**).
6. Turn the ignition switch ON (II).
7. Check the LOW FUEL INDICATOR in the DATA LIST with the HDS.

   Is OFF indicated?

   YES -Replace fuel pressure regulator P1 (see **FUEL PRESSURE REGULATOR P1 REPLACEMENT**), then go to step 35.

NO -Repair short in the wire between the PCM (A41) and the fuel pressure regulator switch 2P connector, the fuel shut-off solenoid valve relay. Also replace fuel pressure regulator P1 (see **FUEL PRESSURE REGULATOR P1 REPLACEMENT**). Then go to step 35.

8. Check the FUEL RAIL PRESSURE SENSOR in the DATA LIST with the HDS, and note the value.
9. Turn the ignition switch OFF.
10. Close the manual shut-off valve.
11. Start the engine, and let it idle until it stops.
12. Check the FUEL RAIL PRESSURE SENSOR in the DATA LIST with the HDS.
13. Compare the current value of the FUEL RAIL PRESSURE SENSOR with the value from step 8.

    Is the current value lower than the value from step 4?

    YES -Go to step 14.

    NO -Go to step 18.

14. Turn the ignition switch OFF.
15. Disconnect the fuel pressure regulator switch 2P connector (see **FUEL PRESSURE SWITCH REPLACEMENT**).
16. Turn the ignition switch ON (II).
17. Check the LOW FUEL INDICATOR in the DATA LIST with the HDS.

    Is OFF indicated?

    YES -Replace fuel pressure regulator P1 (see **FUEL PRESSURE REGULATOR P1 REPLACEMENT**), then go to step 35.

    NO -Repair short in the wire between the PCM (A41) and the fuel pressure regulator switch 2P connector, the fuel shut-off solenoid valve relay. Also replace fuel pressure regulator P1 (see **FUEL PRESSURE REGULATOR P1 REPLACEMENT**). Then go to step 35.

18. Turn the ignition switch OFF.
19. Disconnect the fuel rail pressure sensor 3P connector (see **FUEL PRESSURE SWITCH REPLACEMENT**).
20. Connect fuel rail pressure sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

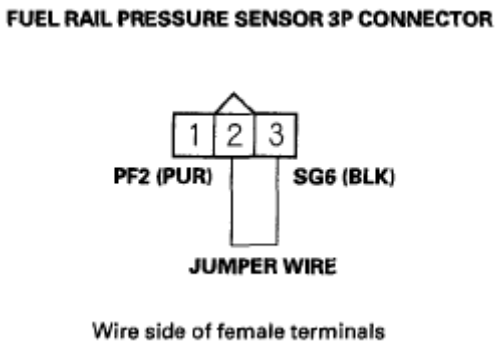


Fig. 11: Connecting Fuel Rail Pressure Sensor 3P Connector Terminals No. 2 And 3 With Jumper Wire

21. Turn the ignition switch ON (II).
22. Check the FUEL RAIL PRESSURE SENSOR in the DATA LIST with the HDS.

    Is there about 4.77 V or more?

    YES -Go to step 23.

    NO -Replace the fuel rail pressure sensor (see **FUEL PRESSURE SWITCH REPLACEMENT**), then go to step 35.

23. Turn the ignition switch OFF.
24. Remove the jumper wire from the fuel rail pressure sensor 3P connector.
25. Turn the ignition switch ON (II).
26. Measure voltage between fuel rail pressure sensor 3P connector terminals No. 1 and No. 3.

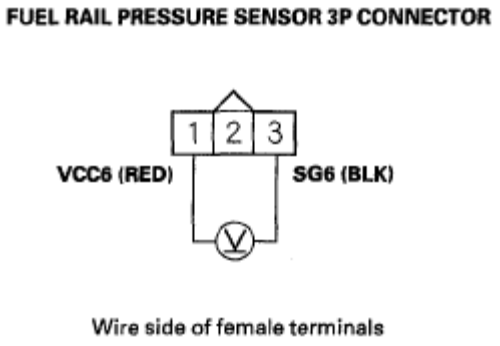


Fig. 12: Measuring Voltage Between Fuel Rail Pressure Sensor 3P Connector Terminals No. 1 And 3

Is there about 5 V?

YES -Go to step 27.

NO -Go to step 31.

27. Turn the ignition switch OFF.
28. Jump the SCS line with the HDS.
29. Disconnect PCM connector C (44P).
30. Check for continuity between fuel rail pressure sensor 3P connector terminal No. 2 and PCM connector terminal C10.

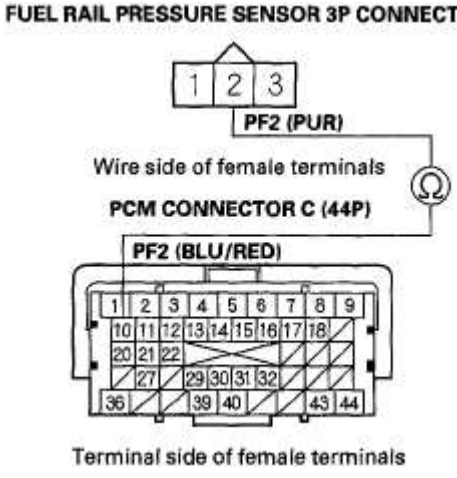


Fig. 13: Checking Continuity Between Fuel Rail Pressure Sensor 3P Connector Terminals

Is there continuity?

YES -Go to step 41.

NO -Repair open in the wire between the PCM (C10) and the fuel rail pressure sensor, then go to step 35.

31. Turn the ignition switch OFF.
32. Jump the SCS line with the HDS.
33. Disconnect PCM connector A (44P).
34. Check for continuity between fuel rail pressure sensor 3P connector terminal No. 3 and PCM connector terminal A9.

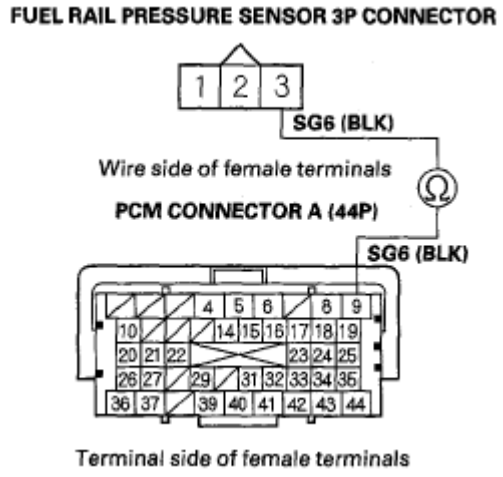

FUEL RAIL PRESSURE SENSOR 3P CONNECTOR
1 2 3
SG6 (BLK)
Wire side of female terminals
PCM CONNECTOR A (44P)
SG6 (BLK)
4 5 6 8 9
10 14 15 16 17 18 19
20 21 22 23 24 25
26 27 29 31 32 33 34 35
36 37 39 40 41 42 43 44
Terminal side of female terminals

Fig. 14: Checking Continuity Between Fuel Rail Pressure Sensor 3P Connector Terminals

Is there continuity?

YES -Go to step 41.

NO -Repair open in the wire between the PCM (A9) and the fuel rail pressure sensor, then go to step 35.

35. Turn the ignition switch OFF.
36. Reconnect all connectors.

37. Turn the ignition switch ON (II).
38. Reset the PCM with the HDS.
39. Do the PCM idle learn procedure, refer to the **ECM/PCM IDLE LEARN PROCEDURE** .
40. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0193 indicated?

    YES -Check for poor connections or loose terminals at the fuel rail pressure sensor and the PCM, then go to step 1.

    NO -Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

41. Reconnect all connectors.
42. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
43. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0193 indicated?

    YES -Check for poor connections or loose terminals at the fuel rail pressure sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then recheck. If the PCM was substituted, go to step 1.

    NO -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM, refer to the **ECM/PCM REPLACEMENT** . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P1187: FTT SENSOR CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting

information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check the FTT SENSOR in the DATA LIST with the HDS.

   Is about 356 °F (180 °C) or more, or 0.08 V or less indicated?

   YES -Go to step 3.

   NO -Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTT sensor and the PCM.

3. Turn the ignition switch OFF.
4. Disconnect the FTT sensor 2P connector (see **FTP SENSOR REPLACEMENT**).
5. Turn the ignition switch ON (II).
6. Check the FTT SENSOR in the DATA LIST with the HDS.

   Is about 356 °F (180 °C) or more, or 0.08 V or less indicated?

   YES -Go to step 7.

   NO -Go to step 11.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (44P).
10. Check for continuity between FTT sensor 2P connector terminal No. 2 and body ground.

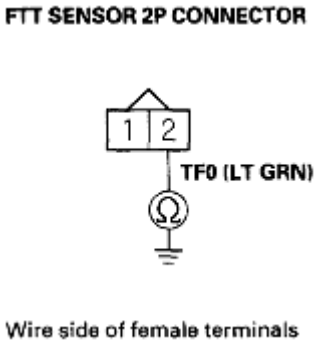


Fig. 15: Checking Continuity Between FTT Sensor 2P Connector Terminal No. 2 And Body Ground

Is there continuity?

YES -Repair short in the wire between the PCM (A32) and the FTT sensor, then go to step 13.

NO -Go to step 18.

11. Turn the ignition switch OFF.
12. Replace the FTT sensor (see **FTP SENSOR REPLACEMENT**).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure, refer to the **ECM/PCM IDLE LEARN PROCEDURE** .
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1187 indicated?

    YES -Check for poor connections or loose terminals at the FTT sensor and the PCM, then go to step 1.

    NO -Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

18. Reconnect all connectors.

19. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1187 indicated?

    YES -Check for poor connections or loose terminals at the FTT sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then recheck. If the PCM was substituted, go to step 1.

    NO -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM, refer to the **ECM/PCM REPLACEMENT** . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P1188: FTT SENSOR CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check the FTT SENSOR in the DATA LIST with the HDS.

   Is about -40°F (-40 °C) or less, or 4.92 V or more indicated?

   YES -Go to step 3.

   NO -Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTT sensor and the PCM.

3. Turn the ignition switch OFF.
4. Disconnect the FTT sensor 2P connector.
5. Connect FTT sensor 2P connector terminals No. 1 and No. 2 with a jumper

wire.

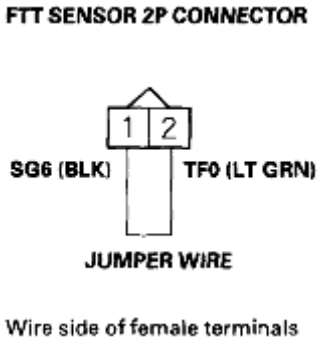


Fig. 16: Connecting FTT Sensor 2P Connector Terminals No. 1 And 2 With Jumper Wire

6. Turn the ignition switch ON (II).
7. Check the FTT SENSOR in the DATA LIST with the HDS.

   Is about -40°F (-40 °C) or less, or 4.92 V or more indicated?

   YES -Go to step 8.

   NO -Go to step 22.

8. Turn the ignition switch OFF.
9. Remove the jumper wire from the FTT sensor 2P connector.
10. Turn the ignition switch ON (II).
11. Measure voltage between FTT sensor 2P connector terminal No. 2 and body ground.

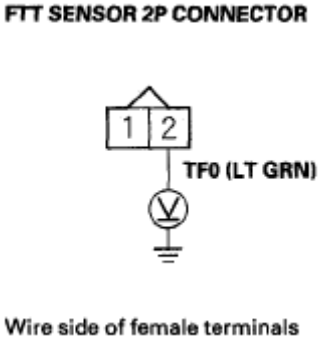


Fig. 17: Measuring Voltage Between FTT Sensor 2P Connector Terminal No. 2 And Body Ground

Is there about 5 V?

YES -Go to step 12.

NO -Go to step 17.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector A (44P).
15. Connect FTT sensor 2P connector terminal No. 1 to body ground with a jumper wire.

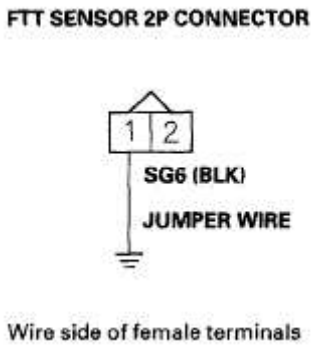


Fig. 18: Connecting FTT Sensor 2P Connector Terminal No. 1 To Body Ground With Jumper Wire

16. Check for continuity between PCM connector terminal A9 and body ground.

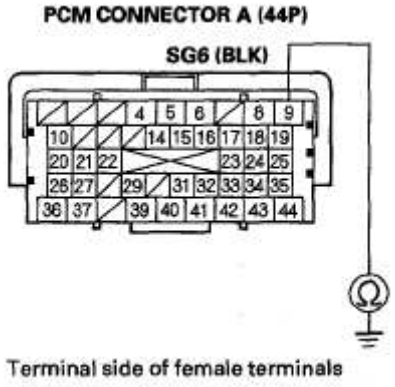


Fig. 19: Checking Continuity Between PCM Connector Terminal A9 And Body Ground

Is there continuity?

YES -Go to step 29.

NO -Repair open in the wire between the PCM (A9) and the FTT sensor, then go to step 24.

17. Turn the ignition switch OFF.
18. Jump the SCS line with the HDS.
19. Disconnect PCM connector A (44P).
20. Connect FTT sensor 2P connector terminal No. 2 to body ground with a jumper wire.

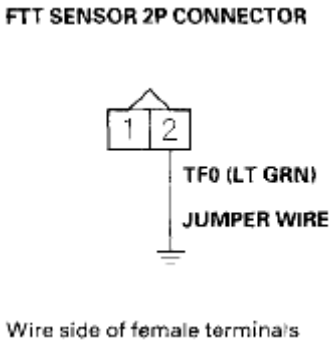


Fig. 20: Connecting FTT Sensor 2P Connector Terminal No. 2 To Body Ground With Jumper Wire

21. Check for continuity between PCM connector terminal A32 and body ground.

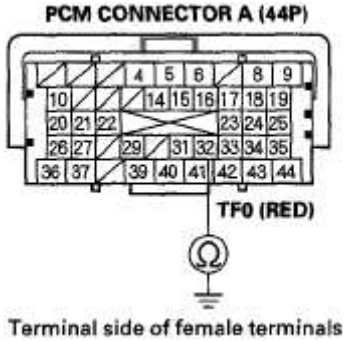


Fig. 21: Checking Continuity Between PCM Connector Terminal A32 And Body Ground

Is there continuity?

YES -Go to step 29.

NO -Repair open in the wire between the PCM (A32) and the FTT sensor, then go to step 24.

22. Turn the ignition switch OFF.
23. Replace the FTT sensor (see **FTP SENSOR REPLACEMENT**).
24. Reconnect all connectors.
25. Turn the ignition switch ON (II).
26. Reset the PCM with the HDS.
27. Do the PCM idle learn procedure, refer to the **ECM/PCM IDLE LEARN PROCEDURE** .
28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1188 indicated?

    YES -Check for poor connections or loose terminals at the FTT sensor and the PCM, then go to step 1.

    NO -Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

29. Reconnect all connectors.
30. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
31. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1188 indicated?

    YES -Check for poor connections or loose terminals at the FTT sensor and the

PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then recheck. If the PCM was substituted, go to step 1.

NO -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM, refer to the **ECM/PCM REPLACEMENT** . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P1192: FTP SENSOR CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check the FTP SENSOR in the DATA LIST with the HDS.

   Is there about 0.23 V or less?

   YES -Go to step 3.

   NO -Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the PCM.

3. Turn the ignition switch OFF.
4. Disconnect the FTP sensor 3P connector.
5. Turn the ignition switch ON (II).
6. Check the FTP SENSOR in the DATA LIST with the HDS.

   Is there about 0.23 V or less?

   YES -Go to step 8.

   NO -Go to step 7.

7. Measure voltage between FTP sensor 3P connector terminals No. 1 and No. 2.

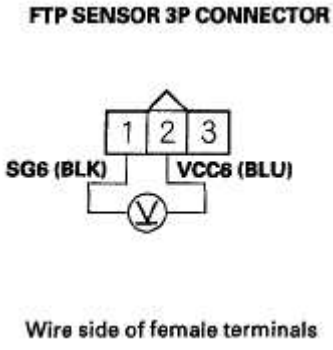


Fig. 22: Measuring Voltage Between FTP Sensor 3P Connector Terminals No. 1 And 2

Is there about 5 V?

YES -Go to step 17.

NO -Go to step 12.

8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector A (44P).
11. Check for continuity between FTP sensor 3P connector terminal No. 3 and body ground.

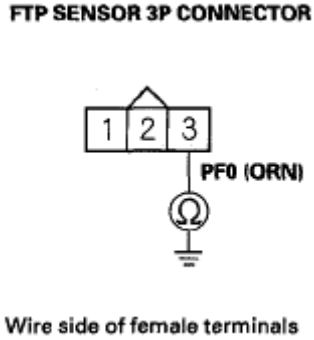


Fig. 23: Checking Continuity Between FTP Sensor 3P Connector Terminal No. 3 And Body Ground

Is there continuity?

YES -Repair open in the wire between the PCM (A26) and the FTP sensor, then go to step 19.

NO -Go to step 24.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector A (44P).
15. Connect FTP sensor 3P connector terminal No. 2 to body ground with a jumper wire.

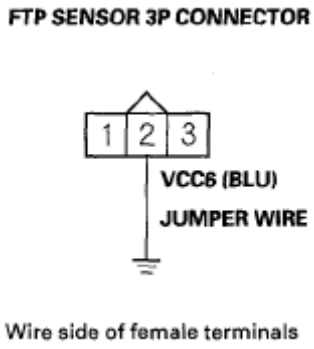


Fig. 24: Connecting FTP Sensor 3P Connector Terminal No. 2 To Body Ground With Jumper Wire

16. Check for continuity between PCM connector terminal A19 and body ground.

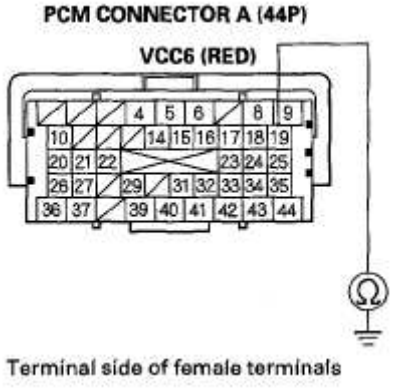


Fig. 25: Checking Continuity Between PCM Connector Terminal A19 And

Body Ground

Is there continuity?

YES -Go to step 24.

NO -Repair open in the wire between the PCM (A19) and the FTP sensor, then go to step 19.

17. Turn the ignition switch OFF.
18. Replace the FTP sensor (see **FTP SENSOR REPLACEMENT**).
19. Reconnect all connectors.
20. Turn the ignition switch ON (II).
21. Reset the PCM with the HDS.
22. Do the PCM idle learn procedure, refer to the **ECM/PCM IDLE LEARN PROCEDURE** .
23. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1192 indicated?

    YES -Check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1.

    NO -Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

24. Reconnect all connectors.
25. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1192 indicated?

    YES -Check for poor connections or loose terminals at the FTP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see

SUBSTITUTING THE PCM), then recheck. If the PCM was substituted, go to step 1.

NO -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM, refer to the **ECM/PCM REPLACEMENT** . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P1193: FTP SENSOR CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check the FTP SENSOR in the DATA LIST with the HDS.

   Is there about 4.61 V or more?

   YES -Go to step 3.

   NO -Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the PCM.

3. Turn the ignition switch OFF.
4. Disconnect the FTP sensor 3P connector.
5. Connect FTP sensor 3P connector terminals No. 1 and No. 3 with a jumper wire.

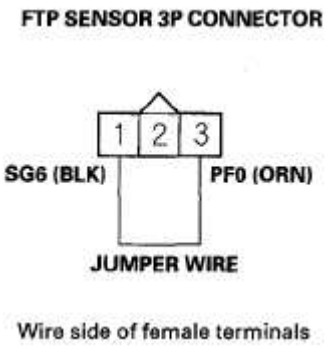


Fig. 26: Connecting FTP Sensor 3P Connector Terminals No. 1 And 3 With Jumper Wire

6. Turn the ignition switch ON (II).
7. Check the FTP SENSOR in the DATA LIST with the HDS.

   Is there about 4.61 V or more?

   YES -Go to step 8.

   NO -Go to step 22.

8. Turn the ignition switch OFF.
9. Remove the jumper wire from the FTP sensor 3P connector.
10. Turn the ignition switch ON (II).
11. Measure voltage between FTP sensor 3P connector terminals No. 1 and No. 2.

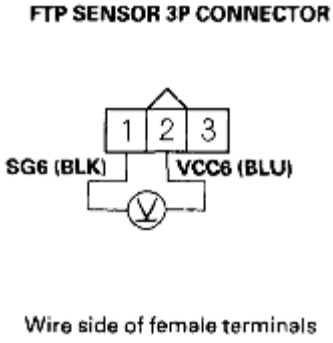


Fig. 27: Measuring Voltage Between FTP Sensor 3P Connector Terminals No. 1 And 2

Is there about 5 V?

YES -Go to step 12.

NO -Go to step 17.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector A (44P).
15. Connect FTP sensor 3P connector terminal No. 3 to body ground with a jumper wire.

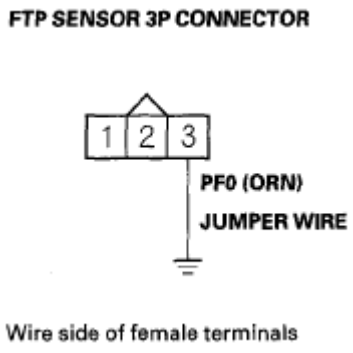


Fig. 28: Connecting FTP Sensor 3P Connector Terminal No. 3 To Body Ground With Jumper Wire

16. Check for continuity between PCM connector terminal A26 and body ground.

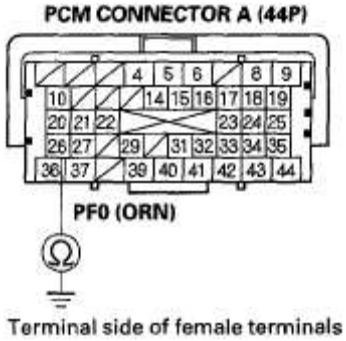


Fig. 29: Checking Continuity Between PCM Connector Terminal A26 And Body Ground

Is there continuity?

YES -Go to step 29.

NO -Repair open in the wire between the PCM (A26) and the FTP sensor, then go to step 24.

17. Turn the ignition switch OFF.
18. Jump the SCS line with the HDS.
19. Disconnect PCM connector A (44P).
20. Connect FTP sensor 3P connector terminal No. 1 to body ground with a jumper wire.

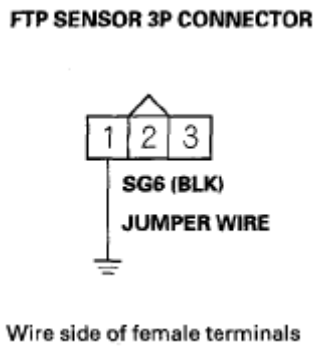


Fig. 30: Connecting FTP Sensor 3P Connector Terminal No. 1 To Body Ground With Jumper Wire

21. Check for continuity between PCM connector terminal A9 and body ground.

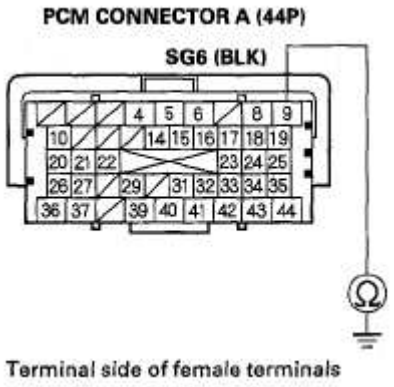


Fig. 31: Checking Continuity Between PCM Connector Terminal A9 And Body Ground

Is there continuity?

YES -Go to step 29.

NO -Repair open in the wire between the PCM (A9) and the FTP sensor, then go to step 24.

22. Turn the ignition switch OFF.
23. Replace the FTP sensor (see **FTP SENSOR REPLACEMENT**).
24. Reconnect all connectors.
25. Turn the ignition switch ON (II).
26. Reset the PCM with the HDS.
27. Do the PCM idle learn procedure, refer to the **ECM/PCM IDLE LEARN PROCEDURE** .
28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1193 indicated?

    YES -Check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1.

    NO -Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

29. Reconnect all connectors.
30. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
31. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1193 indicated?

    YES -Check for poor connections or loose terminals at the FTP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then recheck. If the PCM was substituted, go to step 1.

NO -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM, refer to the **ECM/PCM REPLACEMENT** . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

LOW FUEL INDICATOR TROUBLESHOOTING

If the low fuel indicator is blinking, do this:

NOTE: If the PCM has any DTCs, do the DTC troubleshooting first.

1. Turn the ignition switch ON (II).
2. Check the LOW FUEL INDICATOR in the DATA LIST with the HDS.

   Is ON indicated?

   YES -Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the fuel pressure switch and the PCM, then disconnect the negative cable from the battery for a few seconds to reset the low fuel indicator.

   NO -Go to step 3.

3. Turn the ignition switch OFF.
4. Disconnect the fuel pressure switch 2P connector (see **FUEL PRESSURE SWITCH REPLACEMENT**).
5. Check for continuity between fuel pressure switch 2P connector terminal No. 2 and body ground.

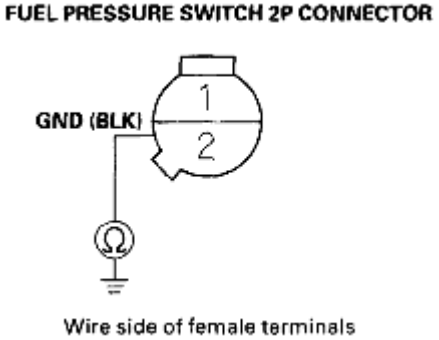


Fig. 32: Checking Continuity Between Fuel Pressure Switch 2P Connector Terminal No. 2 And Body Ground

Is there continuity?

YES -Go to step 6.

NO -Repair open in the wire between the fuel pressure switch and G401 (see **CONNECTOR INDEX**), then disconnect the negative cable from the battery for a few seconds to reset the low fuel indicator.

6. Remove the driver's dashboard undercover, refer to the **DRIVER'S DASHBOARD UNDERCOVER REMOVAL/INSTALLATION** .
7. Remove the fuel shut-off solenoid valve relay (A).

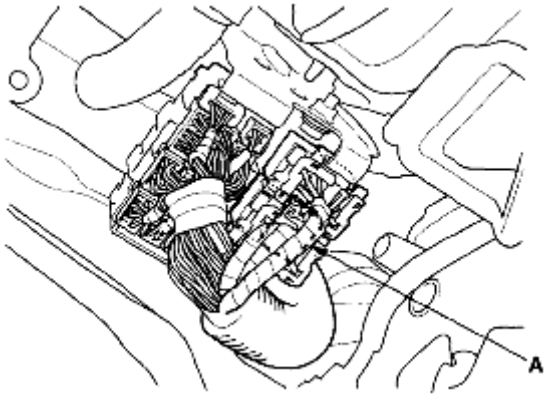


Fig. 33: Identifying Fuel Shut-Off Solenoid Valve Relay

8. Turn the ignition switch ON (II).
9. Measure voltage between fuel pressure switch 2P connector terminal No. 1 and body ground.

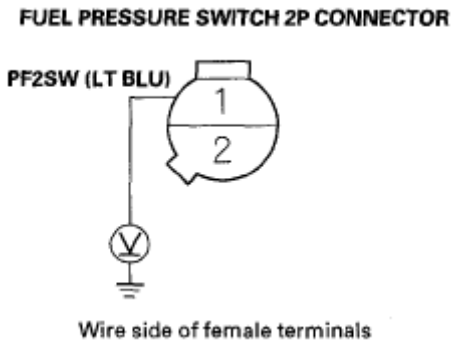


Fig. 34: Measuring Voltage Between Fuel Pressure Switch 2P Connector Terminal No. 1 And Body Ground

Is there about 5 V?

YES -Go to step 15.

NO -Go to step 10.

10. Turn the ignition switch OFF.
11. Connect fuel pressure switch 2P connector terminal No. 1 to body ground with a jumper wire.

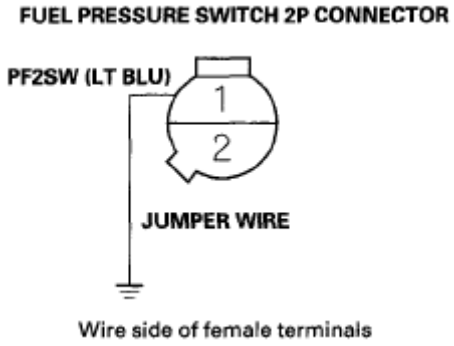


Fig. 35: Connecting Fuel Pressure Switch 2P Connector Terminal No. 1 To Body Ground With Jumper Wire

12. Jump the SCS line with the HDS.
13. Disconnect PCM connector A (44P).
14. Check for continuity between body ground and PCM connector terminal A41.

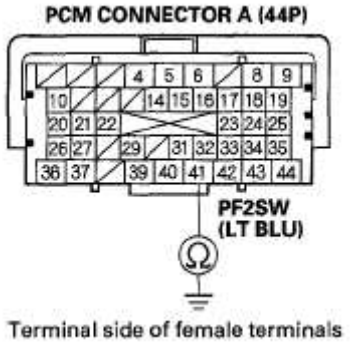


Fig. 36: Checking Continuity Between Body Ground And PCM Connector Terminal A41

Is there continuity?

YES -Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM, refer to the **ECM/PCM REPLACEMENT** , then disconnect the negative cable from the battery for a few seconds to reset the low fuel indicator.

NO -Repair open in the wire between the fuel pressure switch and the PCM (A41), then disconnect the negative cable from the battery for a few seconds to reset the low fuel indicator.

15. Check the FUEL RAIL PRESSURE SENSOR in the DATA LIST with the HDS.

    Is about 500 kPa indicated?

    YES -Replace the fuel pressure regulator P1 (see **FUEL PRESSURE REGULATOR P1 REPLACEMENT**), then disconnect the negative cable from the battery for a few seconds to reset the low fuel indicator.

    NO -Replace the original fuel pressure switch (see **FUEL PRESSURE SWITCH REPLACEMENT**), then disconnect the negative cable from the battery for a few seconds to reset the low fuel indicator.

FUEL SHUT-OFF SOLENOID VALVE 1/FUEL SHUT-OFF SOLENOID VALVE 2 CIRCUIT TROUBLESHOOTING

1. Turn the ignition switch OFF.
2. Remove the driver's dashboard undercover, refer to the **DRIVER'S DASHBOARD UNDERCOVER REMOVAL/INSTALLATION** .
3. Remove the fuel shut-off solenoid valve relay (A).

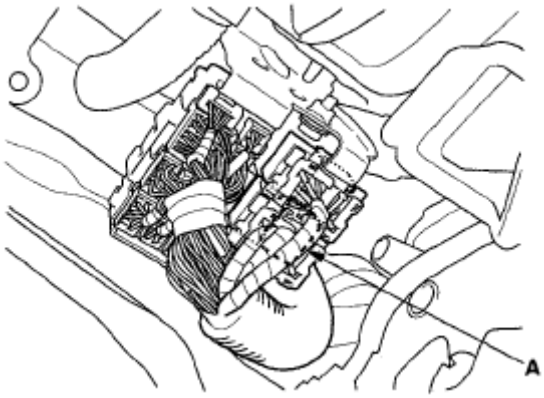


Fig. 37: Identifying Fuel Shut-Off Solenoid Valve Relay

4. Turn the ignition switch ON (II).
5. Measure voltage between fuel shut-off solenoid valve relay 5P connector terminal No. 5 and body ground.

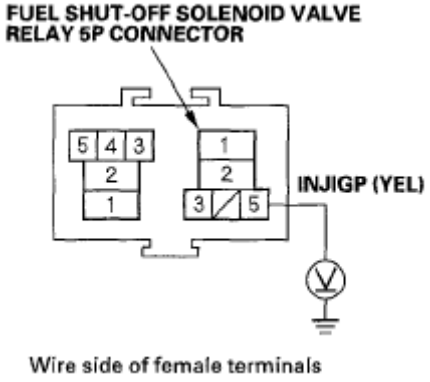


Fig. 38: Measuring Voltage Between Fuel Shut-Off Solenoid Valve Relay 5P Connector Terminal No. 5 And Body Ground

Is there battery voltage?

YES -Go to step 6.

NO -Go to step 11.

6. Measure voltage between fuel shut-off solenoid valve relay 5P connector terminal No. 1 and body ground.

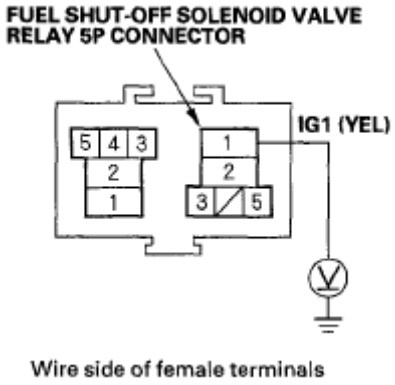


Fig. 39: Measuring Voltage Between Fuel Shut-Off Solenoid Valve Relay 5P Connector Terminal No. 1 And Body Ground

Is there battery voltage?

YES -Go to step 14.

NO -Go to step 7.

7. Turn the ignition switch OFF, then check the No. 2 FUEL PUMP (15 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES -Go to step 8.

NO -

- Repair short in the wire between the No. 2 FUEL PUMP (15 A) fuse and the PCM (C36), between the No. 2 FUEL PUMP (15 A) fuse and the fuel shut-off solenoid valve relay, or between the No. 2 FUEL PUMP (15 A) fuse and the immobilizer control unit. Also replace the No. 2 FUEL

PUMP (15A) fuse.

- If the wire is OK, update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM, refer to the **ECM/PCM REPLACEMENT** .

8. Disconnect the under-dash fuse/relay box 12P connector.
9. Connect under-dash fuse/relay box 12P connector terminal No. 12 to body ground with a jumper wire.

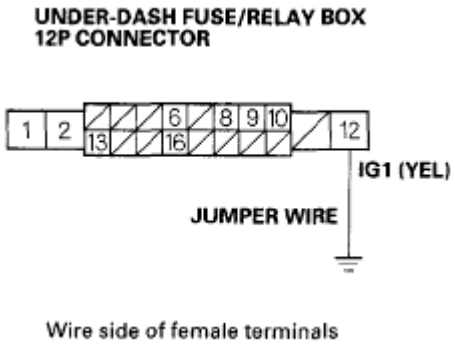


Fig. 40: Connecting Under-Dash Fuse/Relay Box 12P Connector Terminal No. 12 To Body Ground With Jumper Wire

10. Check for continuity between body ground and fuel shut-off solenoid valve relay 5P connector terminal No. 1.

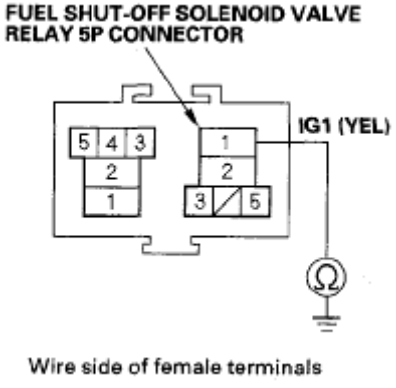


Fig. 41: Checking Continuity Between Body Ground And Fuel Shut-Off Solenoid Valve Relay

Is there continuity?

YES -Replace the under-dash fuse/relay box, refer to the **UNDER-DASH FUSE/RELAY BOX (ALL EXCEPT HYBRID)** .

NO -Repair open in the wire between the under-dash fuse/relay box and the fuel shut-off solenoid valve relay.

11. Turn the ignition switch OFF.
12. Remove the injector control module relay (A).

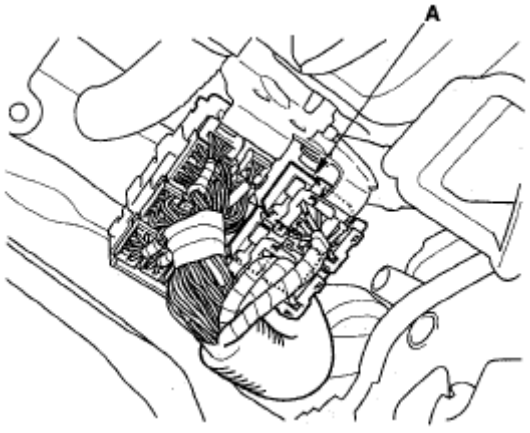


Fig. 42: Identifying Injector Control Module Relay

13. Check for continuity between injector control module relay 5P connector terminal No. 2 and fuel shut-off solenoid valve relay 5P connector terminal No. 5.

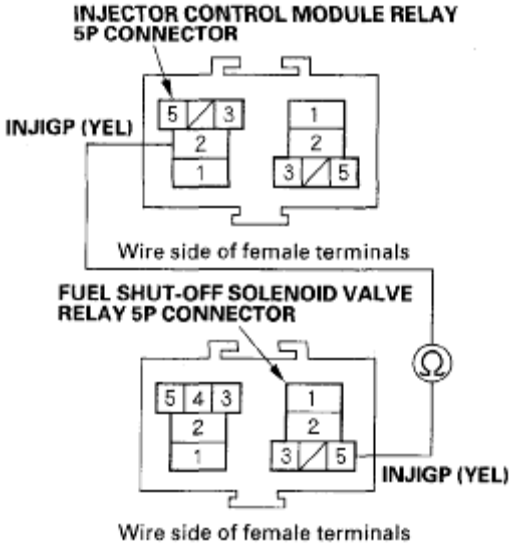

INJECTOR CONTROL MODULE RELAY 5P CONNECTOR
INJIGP (YEL)
Wire side of female terminals
FUEL SHUT-OFF SOLENOID VALVE RELAY 5P CONNECTOR
INJIGP (YEL)
Wire side of female terminals

Fig. 43: Checking Continuity Between Module Relay Terminals And Fuel Shut-Off Solenoid Terminals

Is there continuity?

YES -Do the injector control module relay circuit troubleshooting (see **INJECTOR CONTROL MODULE RELAY CIRCUIT TROUBLESHOOTING**).

NO -Repair open in the wire between the injector control module relay and the fuel shut-off solenoid valve relay.

14. Check for continuity between fuel shut-off solenoid valve relay 5P connector terminal No. 3 and body ground.

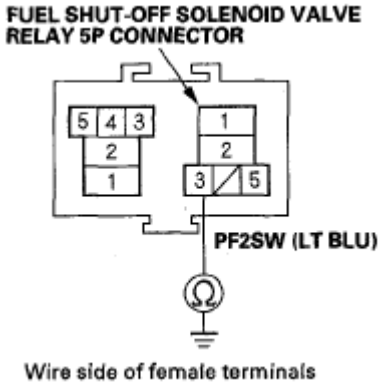


Fig. 44: Checking Continuity Between Fuel Shut-Off Solenoid Valve Relay 5P Connector Terminals

Is there continuity?

YES -Go to step 15.

NO -Repair open in the wire between the fuel pressure regulator switch and the fuel shut-off solenoid valve relay. If the wire is OK, replace the fuel pressure switch (see **FUEL PRESSURE SWITCH REPLACEMENT**).

15. Reinstall the fuel shut-off solenoid valve relay.
16. Turn the ignition switch ON (II).
17. Measure voltage between fuel shut-off solenoid valve relay 5P connector terminal No. 3 and body ground.

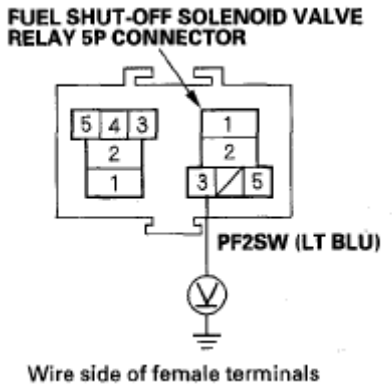


Fig. 45: Measuring Voltage Between Fuel Shut-Off Solenoid Valve Relay 5P Connector Terminals

Is there battery voltage?

YES -Go to step 18.

NO -Replace the fuel shut-off solenoid valve relay.

18. Turn the ignition switch OFF.
19. Disconnect the fuel shut-off solenoid valve 2 2P connector (see **FUEL PRESSURE REGULATOR P1 REPLACEMENT**).

20. Turn the ignition switch ON (II), then measure voltage between fuel shut-off solenoid valve 2 2P connector terminal No. 2 and body ground within 2 seconds.

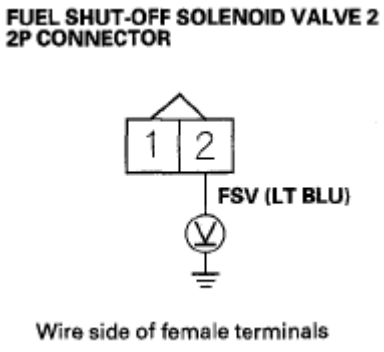


Fig. 46: Measuring Voltage Between Fuel Shut-Off Solenoid Valve 2 2P Connector Terminals

Is there battery voltage?

YES -Go to step 28.

NO -Go to step 21.

21. Turn the ignition switch OFF.
22. Disconnect the fuel subharness 6P connector (see **FUEL PRESSURE RELIEVING**).
23. Turning the ignition switch ON (II), then measure voltage between fuel subharness 6P connector terminal No. 2 and body ground within 2 seconds.

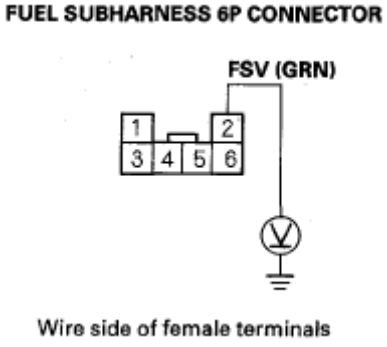


Fig. 47: Measuring Voltage Between Fuel Subharness 6P Connector

Terminal No. 2 And Body Ground

Is there battery voltage?

YES -Go to step 30.

NO -Go to step 24.

24. Turn the ignition switch OFF.
25. Remove the fuel shut-off solenoid valve relay (A).

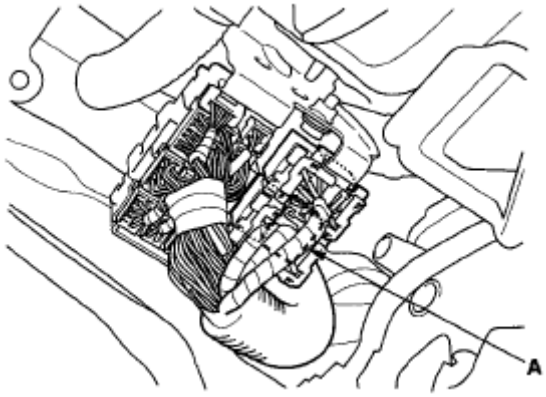


Fig. 48: Identifying Fuel Shut-Off Solenoid Valve Relay

26. Connect fuel shut-off solenoid valve relay 5P connector terminals No. 1 and No. 2 with a jumper wire.

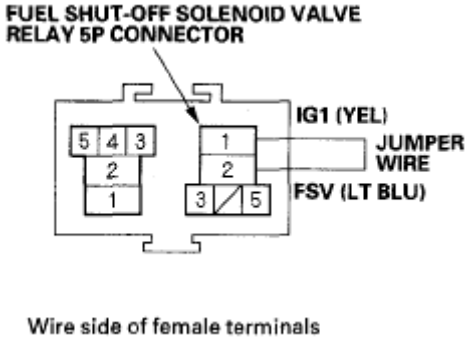


Fig. 49: Connecting Fuel Shut-Off Solenoid Valve Relay 5P Connector Terminals 1 And 2 With Jumper Wire

27. Turn the ignition switch ON (II), then measure voltage between fuel shut-off

solenoid valve 2 2P connector terminal No. 2 and body ground within 2 seconds.

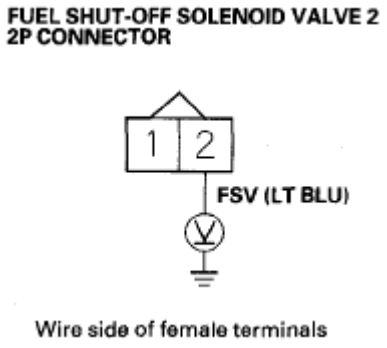


Fig. 50: Measuring Voltage Between Fuel Shut-Off Solenoid Valve 2 2P Connector Terminal No. 2 And Body Ground

Is there battery voltage?

YES -Check the fuel subharness, and repair it as necessary. Replace the fuel shut-off solenoid valve relay.

NO -Repair open in the wire between the fuel shut-off solenoid valve relay, fuel shut-off solenoid valve 2, and the fuel subharness 6P connector.

28. Turn the ignition switch OFF.
29. Check for continuity between fuel shut-off solenoid valve 2 2P connector terminal No. 1 and body ground.

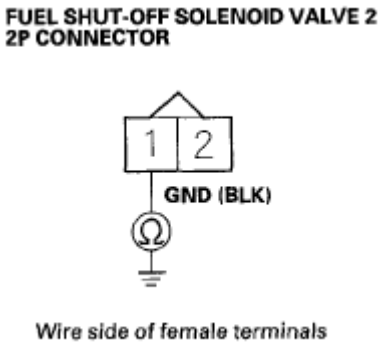


Fig. 51: Checking Continuity Between Fuel Shut-Off Solenoid Valve 2 2P Connector Terminals

Is there continuity?

YES -Replace the fuel pressure regulator P1 solenoid valve (see **FUEL PRESSURE REGULATOR P1 REPLACEMENT**).

NO -Repair open in the wire between fuel shut-off solenoid valve 2 and G401 (see **CONNECTOR INDEX**).

30. Turn the ignition switch OFF.
31. Check for continuity between fuel subharness 6P connector terminal No. 1 and body ground.

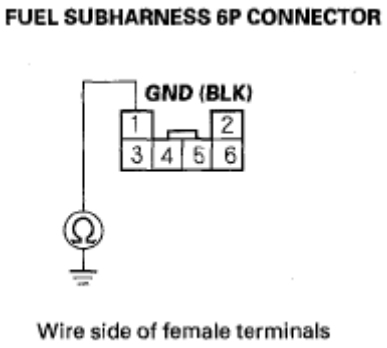


Fig. 52: Checking Continuity Between Fuel Subharness 6P Connector Terminal No. 1 And Body Ground

Is there continuity?

YES -Check the fuel subharness, and replace it if necessary. If the fuel subharness is OK, replace the fuel tank (see **FUEL TANK REMOVAL/INSTALLATION**).

NO -Repair open in the wire between the fuel subharness 6P connector and G601 (see **CONNECTOR INDEX**).

INJECTOR CONTROL MODULE CIRCUIT TROUBLESHOOTING

1. Turn the ignition switch OFF.
2. Disconnect the injector control module 26P connector (see **FUEL TEMPERATURE SENSOR REPLACEMENT**).

3. Disconnect the injector 2P connector.
4. Check for continuity between each injector 2P connector terminal No. 2 and body ground (see table).

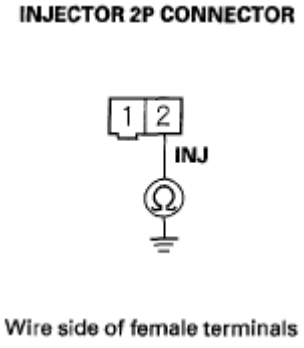


Fig. 53: Checking Continuity Between Injector 2P Connector Terminal No. 2 And Body Ground

CONTINUITY REFERENCE

INJECTOR	INJECTOR CONTROL MODULE TERMINAL	WIRE COLOR
No. 1	No. 2	BRN
No. 2	No. 1	RED
No. 3	No. 15	BLU
No. 4	No. 14	YEL

Is there continuity?

YES -Repair short in the wire between the injector control module and the injector.

NO -Go to step 5.

5. Connect each injector 2P connector terminal No. 2 to body ground with a jumper wire.

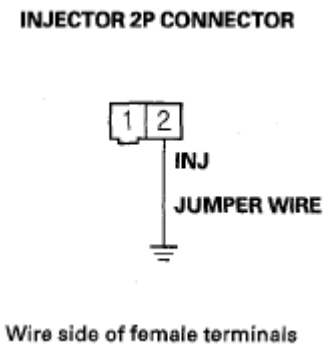


Fig. 54: Connecting Injector 2P Connector Terminal No. 2 To Body Ground With Jumper Wire

6. Check for continuity between body ground and injector control module 26P connector terminals No. 1, No. 2, No. 14, and No. 15.

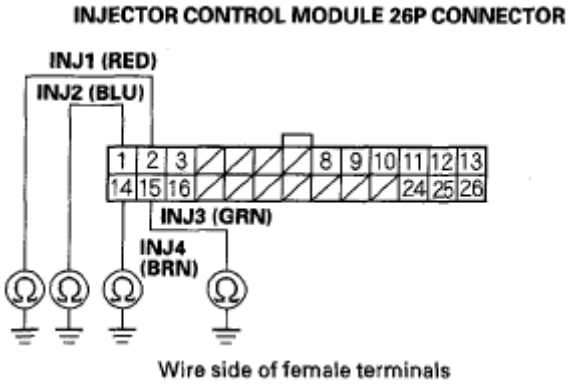

INJECTOR CONTROL MODULE 26P CONNECTOR
INJ1 (RED)
INJ2 (BLU)
1 2 3 8 9 10 11 12 13
14 15 16 24 25 26
INJ3 (GRN)
INJ4 (BRN)
Wire side of female terminals

Fig. 55: Checking Continuity Between Body Ground And Injector Control Module 26P Terminals

Is there continuity?

YES -Go to step 7.

NO -Repair open in the wire between the injector control module and the injector.

7. Jump the SCS line with the HDS.
8. Disconnect PCM connectors A (44P) and C (44P).
9. Check for continuity between body ground and the PCM connector terminals (see table).

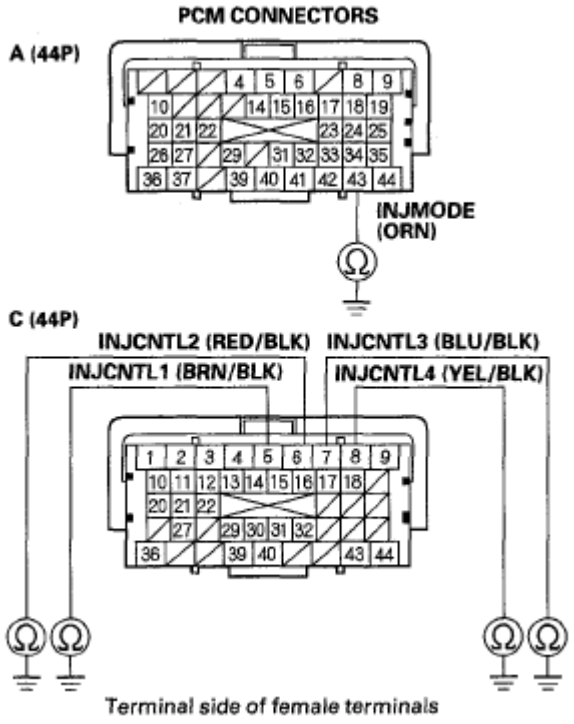


Fig. 56: Checking Continuity Between Body Ground And PCM Connector Terminals

CONTINUITY REFERENCE

PCM TERMINAL	PCM TERMINAL NAME	INJECTOR CONTROL MODULE TERMINAL	WIRE COLOR
C5	INJCNTL1	No. 11	BRN/BLK
C6	INJCNTL2	No. 10	RED/BLK
C7	INJCNTL3	No. 9	BLU/BLK
C8	INJCNTL4	No. 8	YEL/BLK
A43	INJMODE	No. 24	ORN

Is there continuity?

YES -Repair short in the wire between the PCM and the injector control module.

NO -Go to step 10.

10. Connect injector control module 26P connector terminals No. 8, No. 9, No. 10, No. 11, and No. 24 to body ground with a jumper wire (see table).

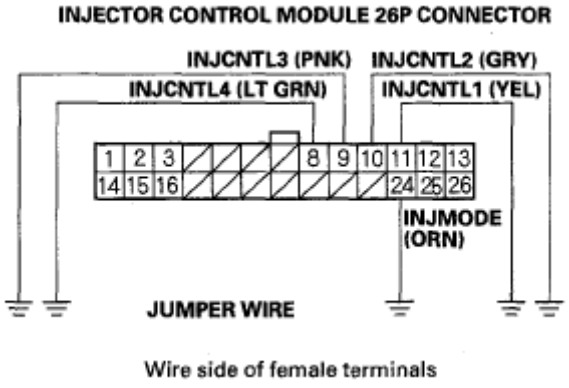


Fig. 57: Connecting Injector Control Module 26P Connector Terminals No. 8, 9, 10, 11 And 24 To Body Ground With Jumper Wire

INJECTOR CONTROL MODULE CONNECTOR TERMINALS CONNECTION REFERENCE

PCM TERMINAL	PCM TERMINAL NAME	INJECTOR CONTROL MODULE TERMINAL	WIRE COLOR
C5	INJCNTL1	No. 11	YEL
C6	INJCNTL2	No. 10	GRY
C7	INJCNTL3	No. 9	PNK
C8	INJCNTL4	No. 8	LT GRN
A43	INJMODE	No. 24	ORN

11. Check for continuity between body ground and the PCM connector terminals (see table).

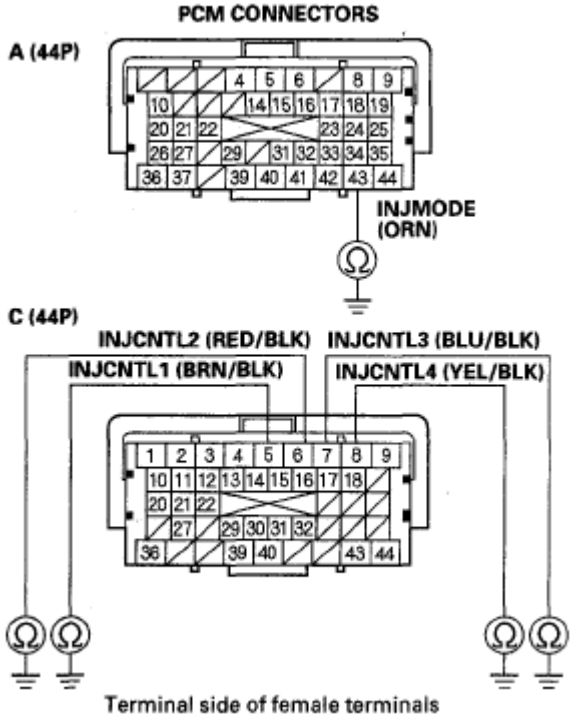


Fig. 58: Checking Continuity Between Body Ground And PCM Connector Terminals

CONTINUITY REFERENCE

PCM TERMINAL	PCM TERMINAL NAME	INJECTOR CONTROL MODULE TERMINAL	WIRE COLOR
C5	INJCNTL1	No. 11	BRN/BLK
C6	INJCNTL2	No. 10	RED/BLK
C7	INJCNTL3	No. 9	BLU/BLK
C8	INJCNTL4	No. 8	YEL/BLK
A43	INJMODE	No. 24	ORN

Is there continuity?

YES -Go to step 12.

NO -Repair open in the wire between the PCM and the injector control module.

12. Turn the ignition switch ON (II), then measure voltage between body ground and injector control module 26P connector terminals No. 13, No. 26, and injector 2P connector terminal No. 1 within 2 seconds.

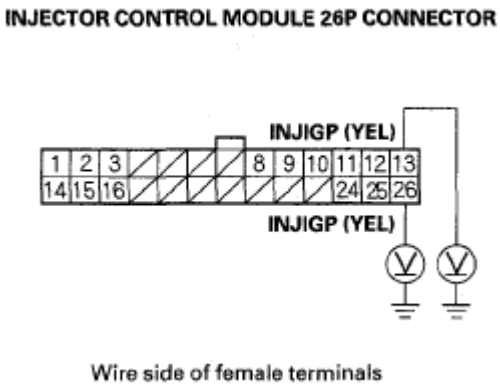

INJECTOR CONTROL MODULE 26P CONNECTOR
INJIGP (YEL)
1 2 3 8 9 10 11 12 13
14 15 16 24 25 26
INJIGP (YEL)
Wire side of female terminals

Fig. 59: Measuring Voltage Between Body Ground And Injector Control Module 26P Connector Terminals No. 13 And 26

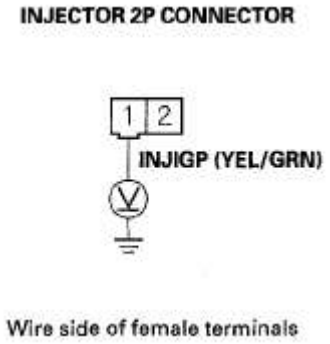


Fig. 60: Measuring Voltage Between Body Ground And Injector 2P Connector Terminal No. 1

Is there battery voltage?

YES -Go to step 13.

NO -Check the injector relay circuit (see **INJECTOR CONTROL MODULE RELAY CIRCUIT TROUBLESHOOTING**).

13. Check for continuity between body ground and injector control module 26P connector terminals No. 3, No. 12, No. 16, and No. 25 individually.

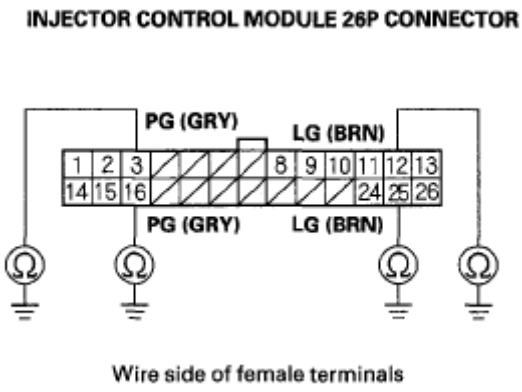

INJECTOR CONTROL MODULE 26P CONNECTOR
PG (GRY)
LG (BRN)
1 2 3 8 9 10 11 12 13
14 15 16 24 25 26
PG (GRY)
LG (BRN)
Wire side of female terminals

Fig. 61: Checking Continuity Between Body Ground And Injector Control Module 26P Terminals

Is there continuity?

YES -Go to step 14.

NO -Repair open in the wire(s) between the injector control module, G101, and the PCM.

14. Turn the ignition switch OFF.
15. Substitute a known-good injector control module (see **FUEL TEMPERATURE SENSOR REPLACEMENT**).
16. Reconnect all connectors.
17. Try to start the engine.

Does the engine start?

YES -Replace the original injector control module (see **FUEL TEMPERATURE SENSOR REPLACEMENT**).

NO -Go to step 18.

18. Turn the ignition switch OFF.
19. Turn the ignition switch ON (II), and listen for a clicking sound from the injectors within 2 seconds.

Do all the injectors click?

YES -Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM, refer to the **ECM/PCM REPLACEMENT** .

NO -Go to step 20.

20. Disconnect the injector 2P connector from the problem cylinder.
21. At injector side, measure resistance between injector 2P connector terminals No. 1 and No. 2.

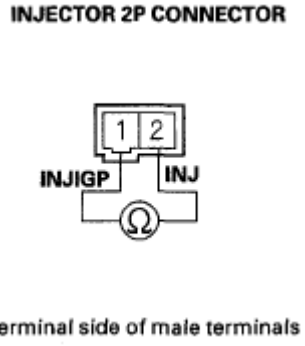


Fig. 62: Measuring Resistance Between Injector 2P Connector Terminals No. 1 And 2

Is there 1.14-1.26 ohms at 68 °F (20 °C)?

YES -Check for poor connections or loose terminals at the injector control module, the injector, and the PCM.

NO -Replace the injector(s) (see **INJECTOR REPLACEMENT**).

INJECTOR CONTROL MODULE RELAY CIRCUIT TROUBLESHOOTING

1. Turn the ignition switch OFF.
2. Remove the driver's dashboard undercover, refer to the **DRIVER'S DASHBOARD UNDERCOVER REMOVAL/INSTALLATION** .
3. Remove the injector control module relay (A).

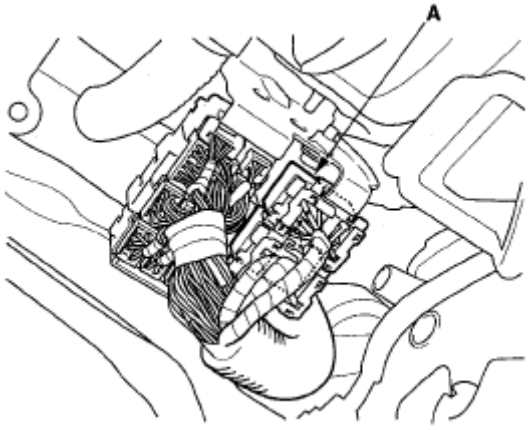


Fig. 63: Identifying Injector Control Module Relay

4. Connect injector control module relay 5P connector terminal No. 3 to body ground with a jumper wire.

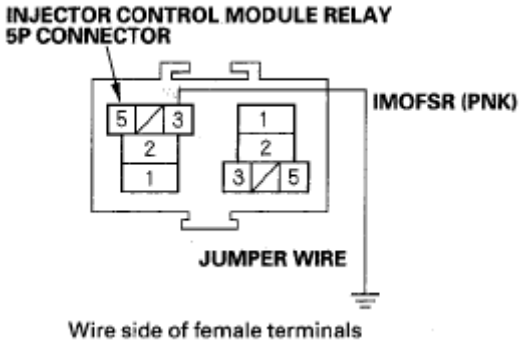


Fig. 64: Connecting Injector Control Module Relay 5P Connector Terminal No. 3 To Body Ground With Jumper Wire

5. Jump the SCS line with the HDS.
6. Disconnect PCM connector A (44P).
7. Check for continuity between body ground and PCM connector terminal A15.

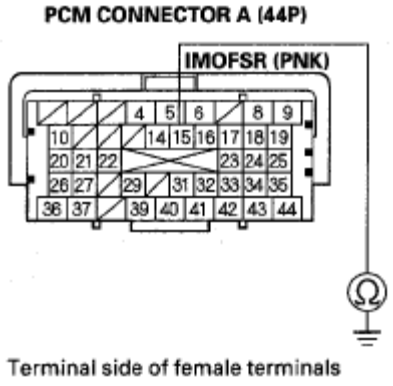


Fig. 65: Checking Continuity Between Body Ground And PCM Connector Terminal A15

Is there continuity?

YES -Go to step 8.

NO -Repair open in the wire between the injector control module relay and the PCM (A15).

8. Measure voltage between injector control module relay 5P connector terminal No. 1 and body ground.

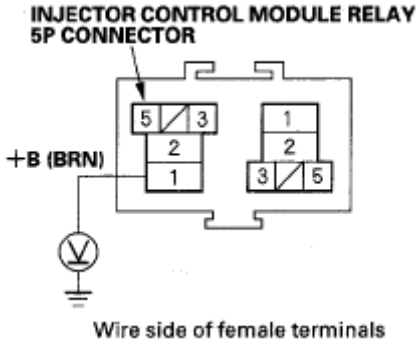


Fig. 66: Measuring Voltage Between Injector Control Module Relay 5P Connector Terminal No. 1 And Body Ground

Is there battery voltage?

YES -Go to step 9.

NO -

- Repair open in the wire between the injector control module relay and the No. 5 +B INJ (15 A) fuse in the under-dash fuse/relay box. Also replace the No. 5 +B INJ (15 A) fuse in the under-dash fuse/relay box.
- Repair open in the wire between the No. 5 +B INJ (15 A) fuse in the under-dash fuse/relay box and the No. 5 +B OP MAIN (80 A) fuse in the under-hood fuse/relay box. Also replace the No. 5 +B OP MAIN (80 A) fuse in the under-hood fuse/relay box.
- If needed, replace the under-hood fuse/relay box, refer to the **UNDER-HOOD FUSE/RELAY BOX (ALL EXCEPT HYBRID)** , or the under-dash fuse/relay box, refer to the **UNDER-DASH FUSE/RELAY BOX (ALL EXCEPT HYBRID)** .

9. Turn the ignition switch ON (II).
10. Measure voltage between injector control module relay 5P connector terminal No. 5 and body ground.

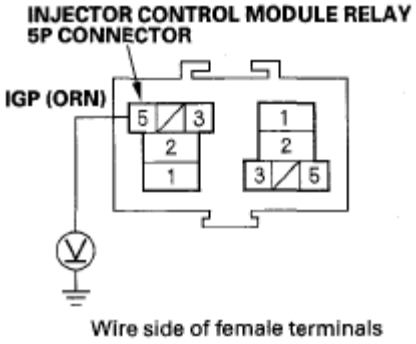


Fig. 67: Measuring Voltage Between Injector Control Module Relay 5P Connector Terminal No. 5 And Body Ground

Is there battery voltage?

YES -Go to step 11.

NO -Repair open in the wire between the injector control module relay and PGM-FI main relay 1.

11. Turn the ignition switch OFF.

12. Reconnect the injector control module relay and PCM connector A (44P).
13. Open the SCS line with the HDS.
14. Turn the ignition switch ON (II).
15. Measure voltage between injector control module relay 5P connector terminal No. 2 and body ground.

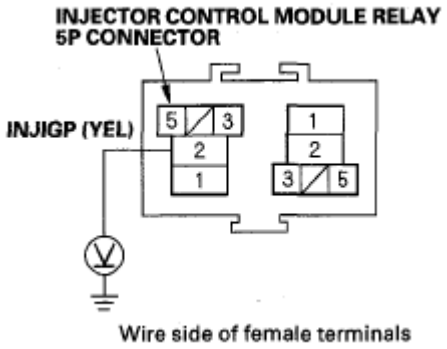


Fig. 68: Measuring Voltage Between Injector Control Module Relay 5P Connector Terminal No. 2 And Body Ground

Is there battery voltage?

YES -Repair open in the wire between the injector control module relay, the injector control module, the injector, or the fuel shut-off solenoid valve relay.

NO -Go to step 16.

16. Test the injector control module relay (see **POWER RELAY TEST**).

Is the injector control module relay OK?

YES -Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM, refer to the **ECM/PCM REPLACEMENT** .

NO -Replace the injector control module relay.

LEAK INSPECTION

Special Tools Required

Vacuum pump/gauge, 0-30 in.Hg, Snap-on YA4000A or equivalent, commercially available

WARNING: Compressed natural gas is flammable and highly explosive. You could be killed or seriously injured if leaking natural gas is ignited.
Stop the engine, and keep heat, sparks and flames away.

Check for a gas leak if there is an odor coming from the vehicle. Compressed natural gas (CNG) can only be smelled, not seen.

1. Open the hood and the fuel fill door.
2. Connect a vacuum pump/gauge, 0-30 in.Hg, to the hose (A) from fuel pressure regulator P1, and apply 67.7 kPa (20 in.Hg, 508 mmHg) of vacuum.

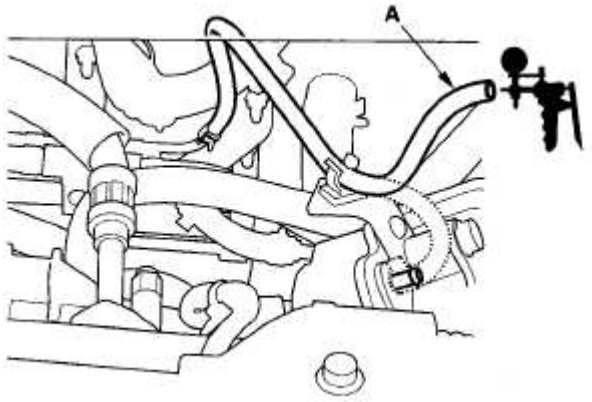


Fig. 69: Identifying Hose

3. If fuel pressure regulator P2 does not hold vacuum, replace it before continuing to the next step.
4. Inspect the fuel lines and hoses under the hood for kinks, abrasion, and other signs of damage.
5. With the manual shut-off valve open, turn the ignition switch ON (II), but do not start the engine. After the fuel pressure regulator shut-off solenoid valve/fuel tank internal solenoid valve operates for about 2 seconds, the fuel

pressure in the fuel lines rises. Turn the ignition switch OFF. Repeat this two or three times.

6. Within 1 minute, check for any damaged lines with a leak detector (A) (Matheson Leak Hunter Plus, model number 8066 or Snoop Soap Suds (B)).

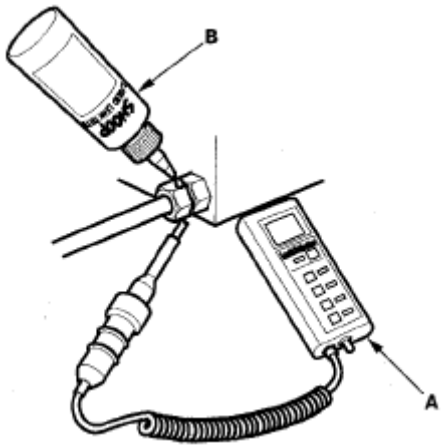


Fig. 70: Identifying Leak Detector And Snoop Soap Suds

7. If no damage was noticed during the inspection, turn the ignition switch ON (II) for 2 seconds, then turn the ignition switch OFF. Within 1 minute, check for a leak at the vent hose outlet inside the fuel pipe protector (A).

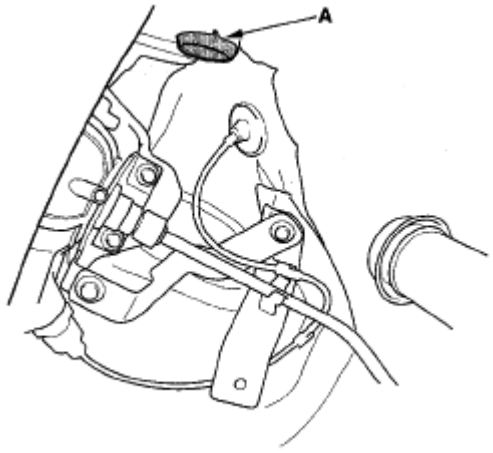


Fig. 71: Identifying Fuel Pipe Protector

8. If you detect a leak, remove the vent hose, and check the fuel lines and fittings at the solenoid valve with a leak detector.
9. If you cannot find the leak, raise the vehicle on a hoist, remove the under-floor

cover, and inspect all the fuel lines under the vehicle visually and with a leak detector.

10. If you still cannot find the leak, remove the rear seat, and check all fuel lines and fittings at the fuel tank and the fuel joint block.

FUEL PRESSURE RELIEVING

WARNING: Compressed natural gas is flammable and highly explosive. You could be killed or seriously injured if leaking natural gas is ignited.
Stop the engine, and keep heat, sparks and flames away.

This procedure should be done outside in a well-ventilated area or in a properly equipped CNG shop.

BETWEEN THE ENGINE AND THE MANUAL SHUT-OFF VALVE

This procedure will allow you to safely work on any part of the fuel system downstream of the manual shut-off valve, such as fuel pressure regulator P1 or the fuel injectors.

1. Lift the vehicle, and support it with jackstands.
2. Close the manual shut-off valve (A).

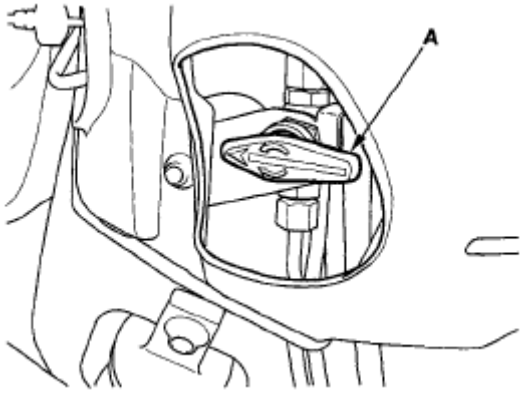


Fig. 72: Identifying Manual Shut-Off Valve

3. Start the engine, and let it idle. After a few minutes, the engine will stall.

4. Turn the ignition switch OFF.

BETWEEN THE FUEL TANK AND THE ENGINE

This procedure will allow you to safely work on any part of the fuel system downstream of the fuel tank such as the fuel joint block or the manual shut-off valve.

NOTE: Make sure the manual shut-off valve is open.

1. Remove the rear seat (see **REAR SEAT REMOVAL/INSTALLATION**).
2. Disconnect the fuel subharness 6P connector (A) (this prevents the tank from supplying fuel to the system).

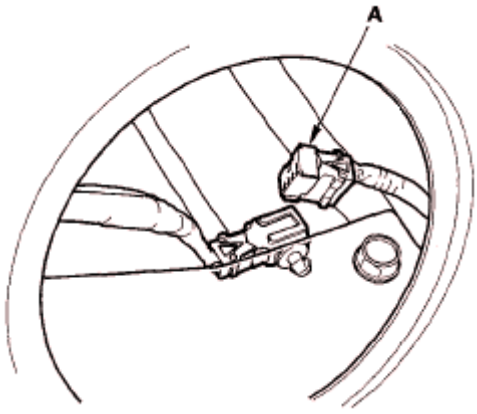


Fig. 73: Identifying Fuel Subharness 6P Connector

3. Start the engine, and let it idle. After a few minutes, the engine will stall.
4. Turn the ignition switch OFF.

BETWEEN THE FUEL RECEPTACLE AND THE FUEL TANK

This procedure will allow you to safely work on any part of the fuel system between the fuel joint block and fuel receptacle.

1. Relieve the fuel pressure between the fuel tank and the manual shut-off valve (see the previous procedure).
2. Remove the under floor cover (A).

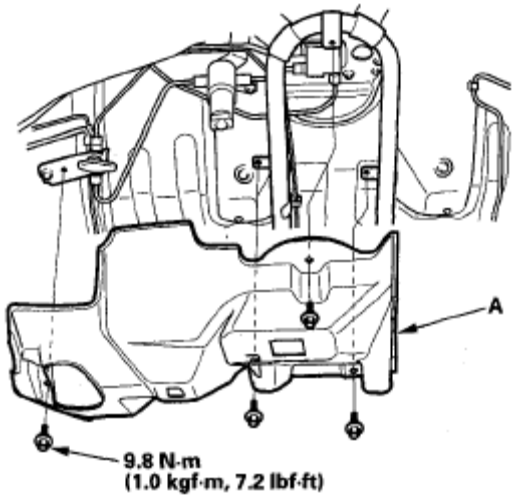


Fig. 74: Identifying Floor Cover With Torque Specifications

3. Loosen the sealing bolt (A) on the fuel joint block slowly.

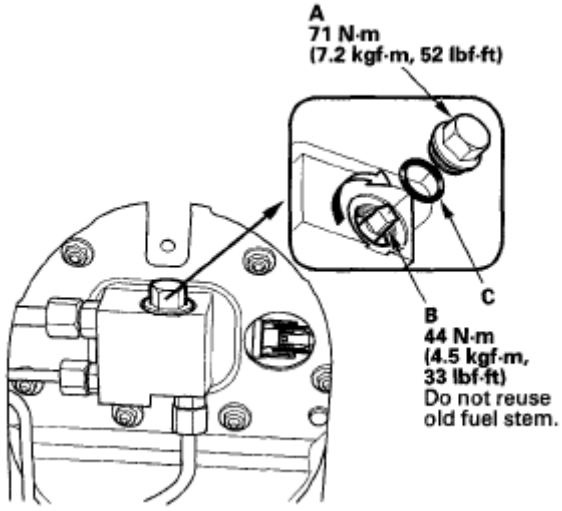


Fig. 75: Identifying Sealing Bolt And Fuel Stem With Torque Specifications

4. Turn the fuel stem assembly (B) 1/2-1 turn counterclockwise.
5. Replace the fuel stem assembly and sealing bolt O-ring (C).

AT THE FUEL TANK

NOTE: This procedure degrades the integrity of the fuel tank. Do it only if you are replacing the fuel tank.

1. Lift the vehicle and support it with jackstands.
2. Close the manual shut-off valve (A).

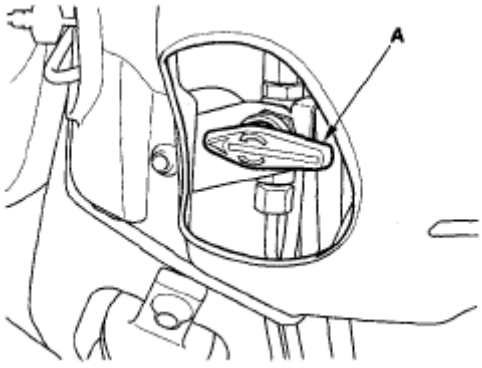


Fig. 76: Identifying Manual Shut-Off Valve

3. Start the engine, and let it idle. After a few minutes, the engine will stall.
4. Turn the ignition switch OFF, and disconnect the negative cable from the battery.
5. Connect a ground wire (A) (available from AH special tools department) to the fuel line to eliminate any static electricity.

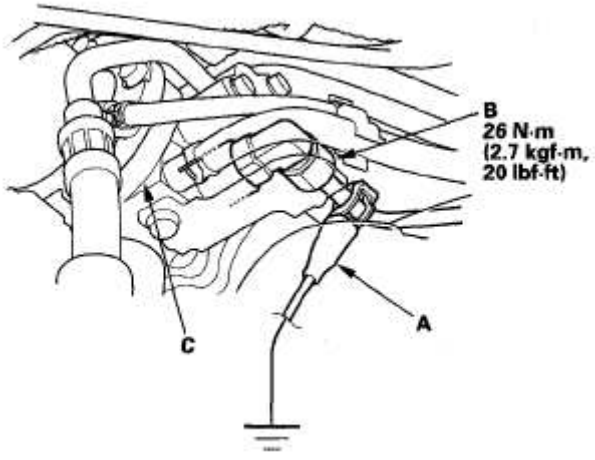


Fig. 77: Identifying Ground Wire, Fuel Supply Pipe And Fuel Pressure Regulator P1

6. Disconnect the fuel supply pipe (B) from fuel pressure regulator P1 (C). Be careful not to lose the O-rings.

NOTE: Always use two wrenches when removing or installing the fuel pipe nut (see FUEL LINE INSPECTION).

7. Connect the vent tube to the fuel supply pipe.
8. Secure the other end of the vent tube to the highest possible location.
9. Remove the fuel pipe duct, and slowly remove the manual lock-down valve (A). Install the manual override vent tool (B) (available from AH special tools department) in its place.

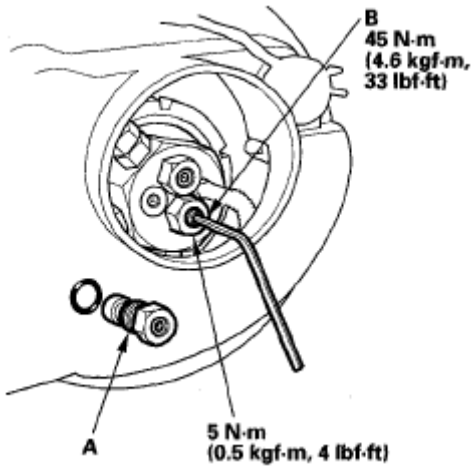


Fig. 78: Identifying Manual Lock-Down Valve, Manual Override Vent Tool With Torque Specifications

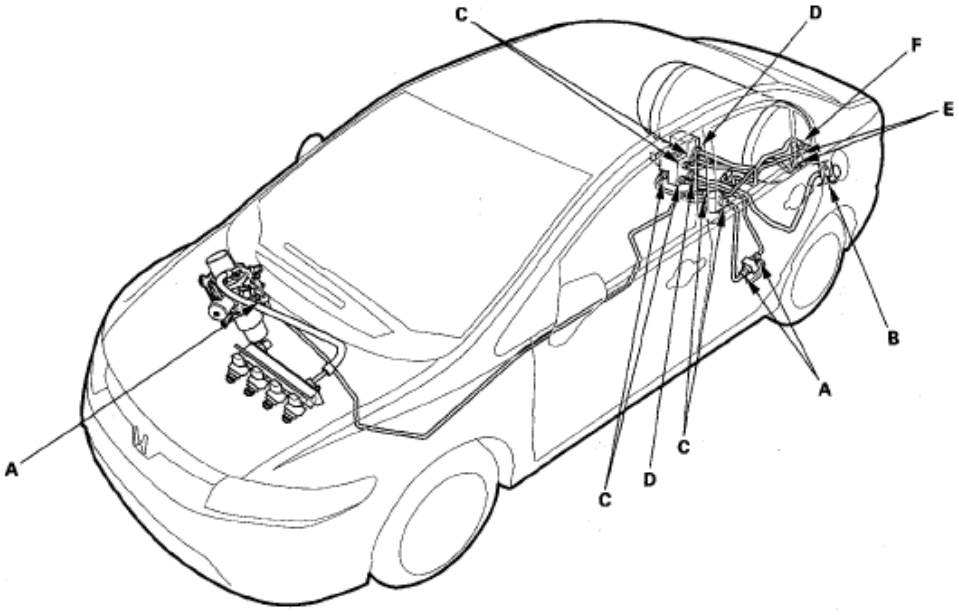
10. Slowly turn the tool's Allen bolt clockwise until it stops. This opens the line between the fuel tank and the manual shut-off valve.
11. Open the manual shut-off valve so fuel can vent from the fuel tank. The fuel tank is empty when the hissing sound goes away.
12. Remove the manual override vent tool.

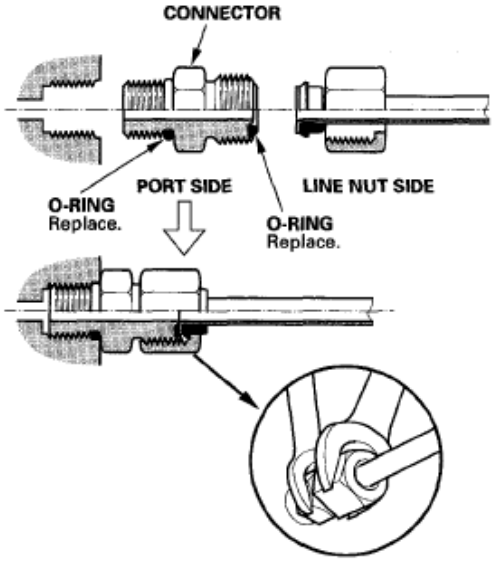
FUEL LINE INSPECTION

Check the fuel system lines, hoses, fuel filter, and other components for damage, leaks, and deterioration, and replace them if necessary.

NOTE: When installing a new O-ring, apply silicone oil or polyalkyleneglycol (PAG) oil to the O-ring, and carefully

install it into its proper position.





PART	PORT SIDE TORQUE	LINE NUT SIDE TORQUE
A	—	26 N·m (2.7 kgf·m, 20 lbf·ft)
B	—	47 N·m (4.8 kgf·m, 35 lbf·ft)
C	31 N·m (3.2 kgf·m, 23 lbf·ft)	26 N·m (2.7 kgf·m, 20 lbf·ft)
D	56 N·m (5.7 kgf·m, 41 lbf·ft)	47 N·m (4.8 kgf·m, 35 lbf·ft)
E	21 N·m (2.1 kgf·m, 15 lbf·ft)	26 N·m (2.7 kgf·m, 20 lbf·ft)
F	34 N·m (3.5 kgf·m, 25 lbf·ft)	47 N·m (4.8 kgf·m, 35 lbf·ft)

Always use two wrenches when removing or installing the fuel line nuts.

Fig. 79: Identifying Fuel Line Nuts With Torque Specifications

NOTE: Check all hose clamps and retighten them if necessary.

*** 1: Apply silicone grease (PARKER CHRISTO-LUBE) to a new O-ring at the fuel filter housing and drain plug, and carefully install it into its proper position.**

*** 2: Apply silicone oil silicone grease (Shinetsu silicone GR 10M) to a new rubber seal, and carefully install it into its proper position.**

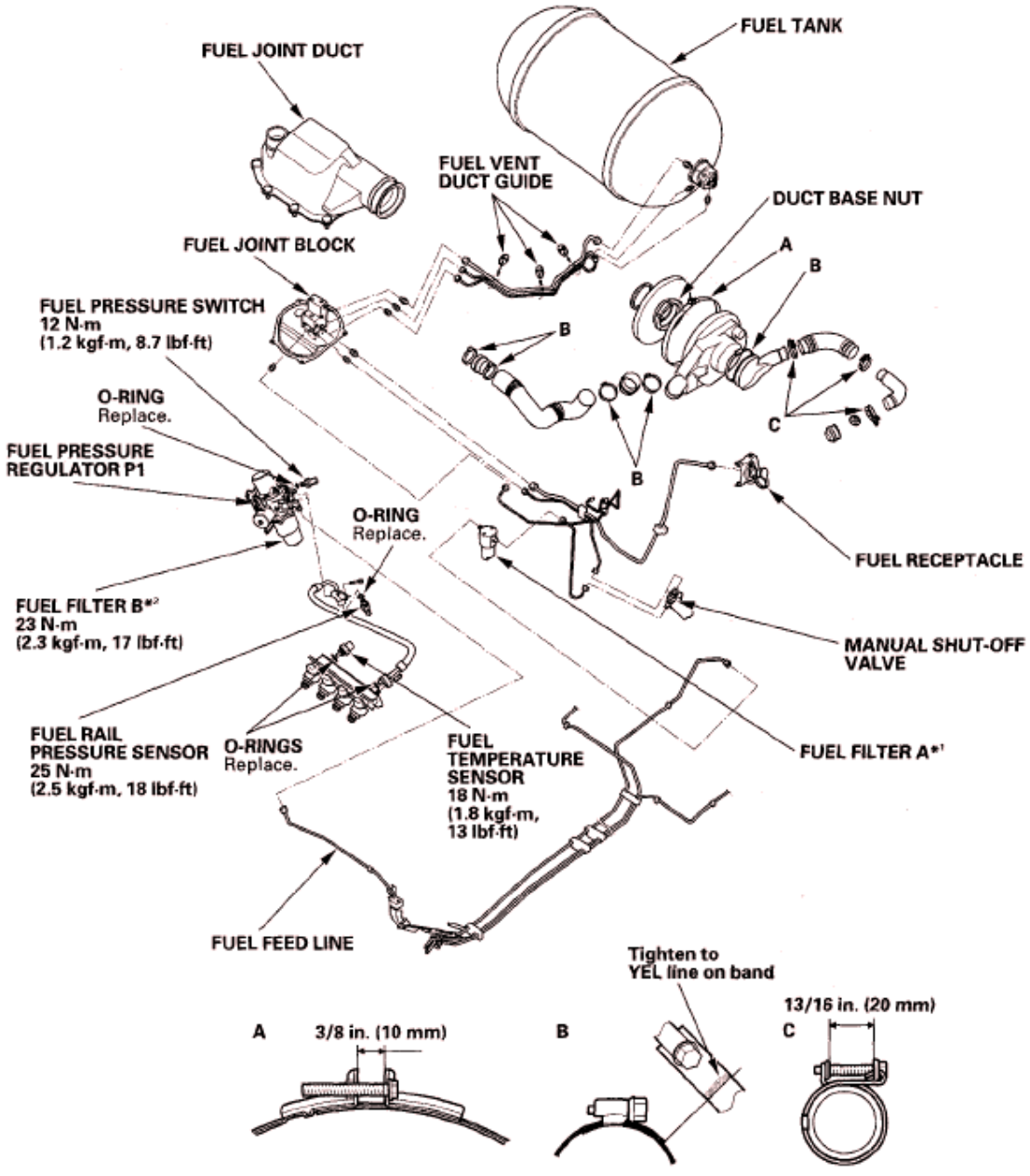


Fig. 80: Exploded View Of Fuel System Line

FUEL FILTER A WATER BLEEDING

WARNING: Compressed natural gas is flammable and highly explosive. You could be killed or seriously injured if leaking natural gas is ignited.
Stop the engine, and keep heat, sparks and flames away.

1. Relieve the fuel pressure (between the engine and the manual shut-off valve) (see **FUEL PRESSURE RELIEVING**).
2. Lift the vehicle and support it with jackstands.
3. Remove the under-floor cover (see step 3 on page 11-147).
4. Loosen the drain plug (A) on fuel filter A slowly, and bleed the water from fuel filter A. Hold the fuel filter housing (B) when loosening the drain plug.

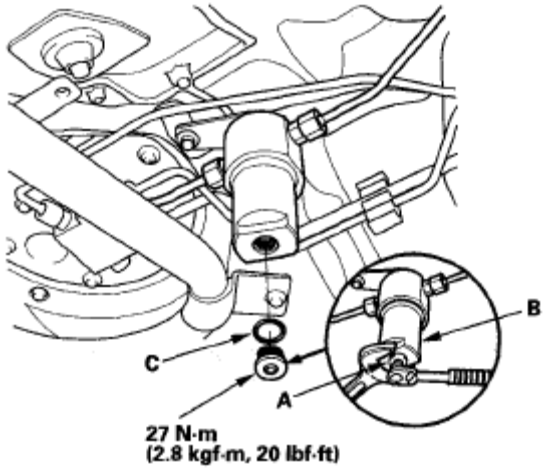


Fig. 81: Loosening Drain Plug

5. Apply silicone grease (PARKER CHRISTO-LUBE) to a new O-ring (C), and carefully install it into its proper position (see **FUEL TANK SCRAPPING**).
6. Install parts in reverse order of removal.
7. Do the leak inspection procedure (see **LEAK INSPECTION**).

FUEL RECEPTACLE INSPECTION

1. Check the nozzle O-ring (A), and replace it if it is damaged.

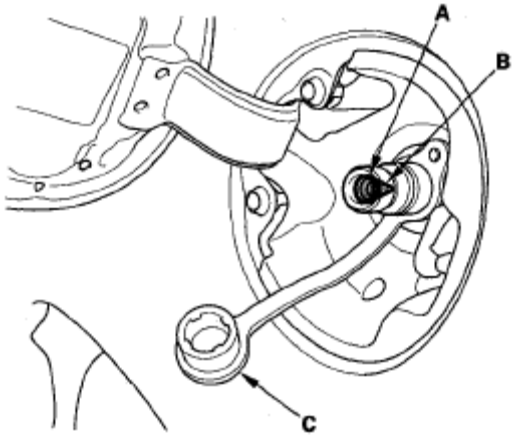


Fig. 82: Identifying Nozzle O-Ring, Filter And Dust Cap

2. Check the filter (B) for contamination, and clean it if it is dirty.
3. Check the dust cap (C), and replace it if it is damaged.
4. If you detect a leak at the fuel receptacle valve (A) after fuel filling, blow fuel on the valve from the nozzle to remove the contamination.

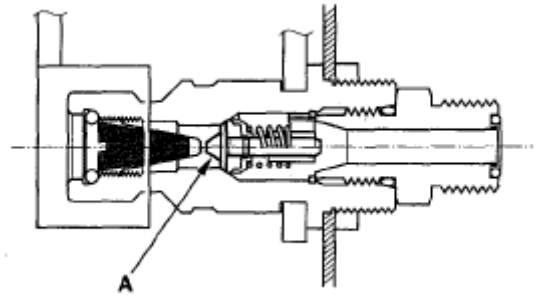


Fig. 83: Identifying Receptacle Valve

FUEL TANK INSPECTION

NOTE:

- **You must be an SCI-certified technician to do fuel tank inspection or replacement work.**
- **You do not need to remove the fuel tank for the inspection.**

1. Remove the rear seat (see **REAR SEAT REMOVAL/INSTALLATION**).
2. Remove the trunk lid from and the trunk partition (see **TRIM**

REMOVAL/INSTALLATION - TRUNK AREA).

3. Check the fuel tank's expiration date at the label (A). If the tank is expired, replace the tank (see **FUEL TANK REMOVAL/INSTALLATION**).

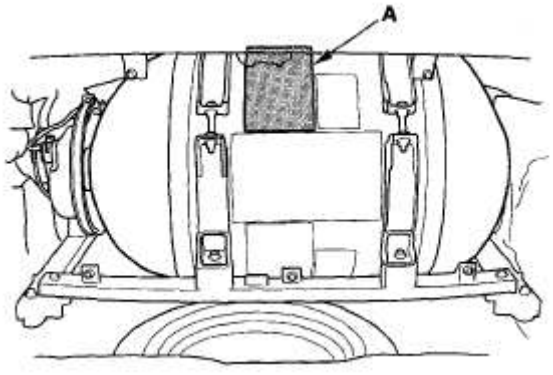


Fig. 84: Identifying Fuel Tank Expiration Date Label

4. Using a flashlight and an inspection mirror, thoroughly check the exterior of the fuel tank for any of these problems:
   - Excessive rust on the bands or the mounting frame
   - Abrasions
   - Cuts
   - Dents
   - Expansion or deformation
   - Evidence of overheating
   - Loose fuel tank frame bolts, and loose fuel tank band bolts and nuts
   - Incorrect alignment of the tank and bands

NOTE: The horizontal alignment of marks (A) on the tank (B) and the bands (C) do not need to be perfectly aligned.

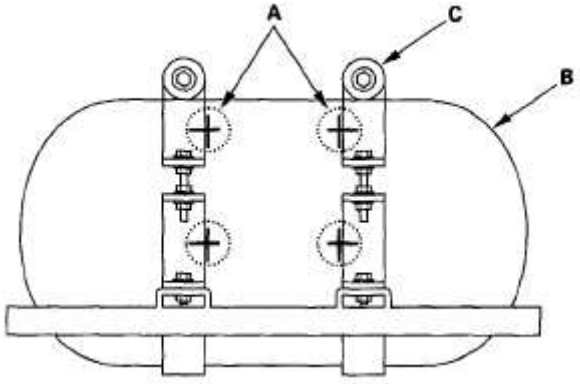


Fig. 85: Identifying Alignment Marks, Tank And Bands

5. If the tank has any problems listed in step 4, refer to the NGV Fuel Container Inspection Guidelines booklet for further information.

FUEL TANK SCRAPPING

NOTE: The fuel tank must be replaced 15 years after its production date.

1. Slowly remove the manual lock-down valve. Install the manual override vent tool in its place. Relieve the fuel pressure from the fuel tank (see **FUEL PRESSURE RELIEVING**).
2. Purge any remaining fuel from the tank with compressed air.
3. Remove the fuel tank (see **FUEL TANK REMOVAL/INSTALLATION**).
4. Dispose of the fuel tank according to your local regulations.

FUEL PIPE CONNECTOR O-RING REPLACEMENT

NOTE:

a. To prevent O-ring contamination, be sure O-rings and mating surfaces are clean just before assembly.

b. Install O-rings with clean hands. Do not install O-rings while wearing fibrous gloves.

c. Do not twist O-rings.

1. Remove the old O-ring.

2. Wrap vinyl tape around the threads, and coat the surface of the tape with silicone oil or grease.

NOTE: Wrap the vinyl tape (A) so that there is no stepped portion.

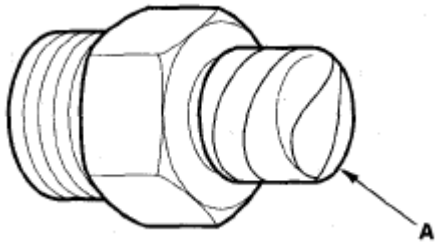


Fig. 86: Identifying Vinyl Tape

3. Install a new O-ring (A) into the groove.

NOTE: Be careful not damage the sealing face of the O-ring.

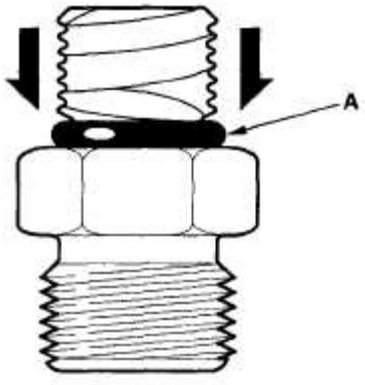


Fig. 87: Identifying O-Ring

4. Using a small brush, apply silicone oil or grease to the outer surface of the O-ring.
5. Remove the vinyl tape.

FUEL PRESSURE REGULATOR P1 REPLACEMENT

WARNING: Compressed natural gas is flammable and highly

explosive. You could be killed or seriously injured if leaking natural gas is ignited.
Stop the engine, and keep heat, sparks and flames away.

1. Relieve fuel pressure between the engine and the manual shut-off valve (see **FUEL PRESSURE RELIEVING**).
2. Drain the engine coolant, refer to the **COOLANT REPLACEMENT** .
3. Remove the cowl cover and under-cowl panel, refer to the **COWL COVER REPLACEMENT** .
4. Remove the fuel pressure regulator protector (A).

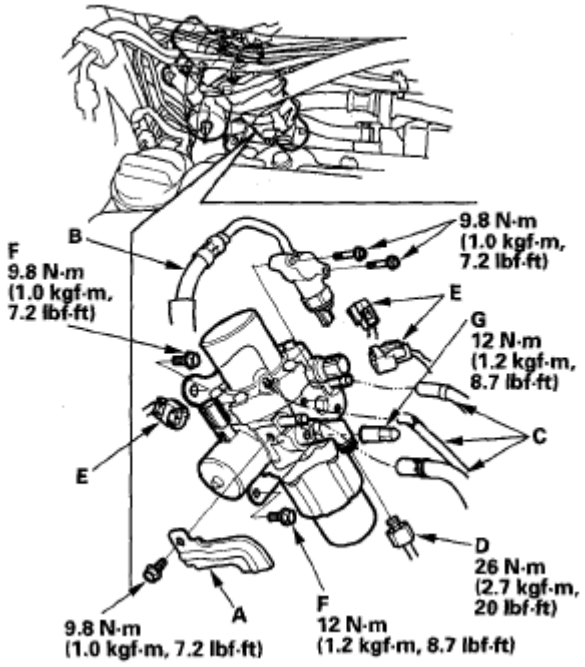


Fig. 88: Exploded View Of Fuel Pressure Regulator With Torque Specifications

5. Remove the fuel feed hose (B), then disconnect the hoses (C) and the fuel line (D).

NOTE: Always use two wrenches when removing or installing the fuel line nuts (see FUEL LINE INSPECTION).

6. Disconnect the connectors (E), and remove the bolt (F) and the nut (G).
7. Lift the vehicle and support it with jackstands.
8. Remove exhaust pipe A, refer to the **EXHAUST PIPE AND MUFFLER REPLACEMENT** .
9. Remove the heat shield (A).

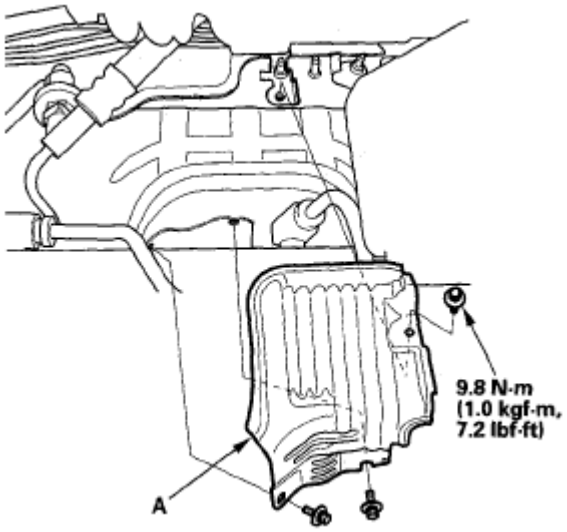


Fig. 89: Identifying Heat Shield With Torque Specifications

10. Remove fuel pressure regulator P1 (A) from the bracket (B).

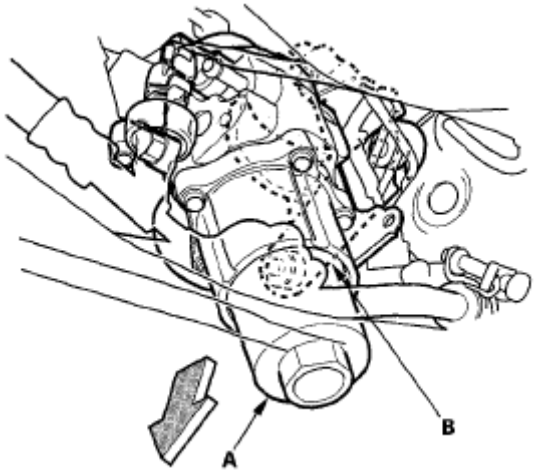


Fig. 90: Removing Fuel Pressure Regulator From Bracket

11. Move fuel pressure regulator P1 (A) as shown.

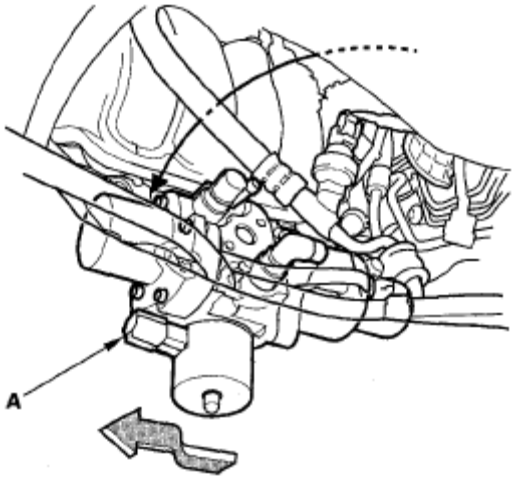


Fig. 91: Moving Fuel Pressure Regulator

12. Remove fuel pressure regulator P1 (A).

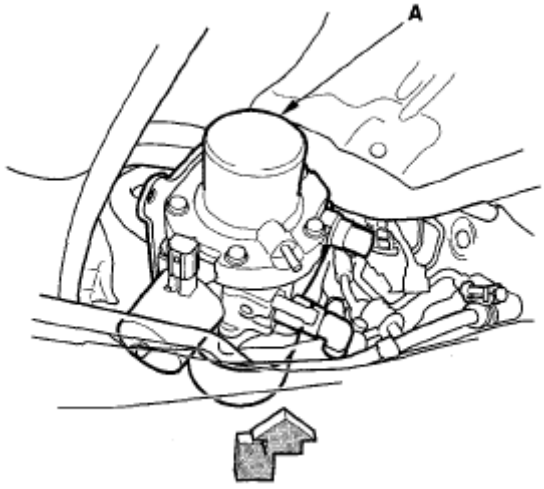


Fig. 92: Identifying Fuel Pressure Regulator

13. Remove the stay (A).

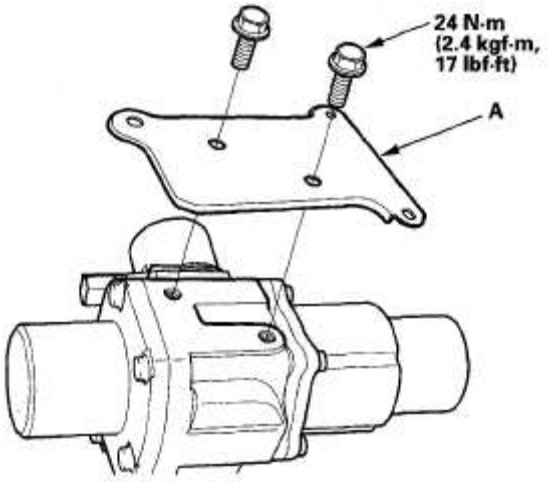


Fig. 93: Identifying Stay With Torque Specifications

14. Install fuel pressure regulator P1 in the reverse order of removal. Be careful not to deform any of the lines, and assemble them securely when you reinstall the heater hoses.

NOTE: Apply silicone oil or polyalkyleneglycol (PAG) oil to a new O-ring and the fuel pressure regulator (see FUEL TANK SCRAPPING).

15. Refill the radiator with engine coolant, refer to the **COOLANT REPLACEMENT** .
16. Do the leak inspection procedure (see **LEAK INSPECTION**).

FUEL PRESSURE SWITCH REPLACEMENT

1. Remove fuel pressure regulator P1 (see **FUEL PRESSURE REGULATOR P1 REPLACEMENT**).
2. Remove the fuel pressure switch (A).

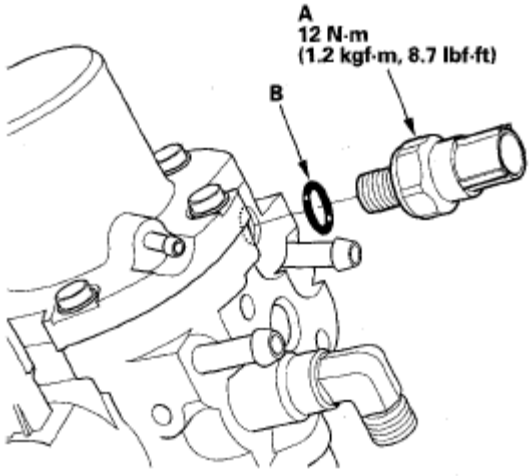


Fig. 94: Identifying Fuel Pressure Switch And O-Ring

3. Apply silicone oil or polyalkyleneglycol (PAG) oil to a new O-ring (B) and carefully install it into its proper position (see **FUEL TANK SCRAPPING**).
4. Install the parts in the reverse order of removal.
5. Do the leak inspection procedure (see **LEAK INSPECTION**).

FUEL RAIL PRESSURE SENSOR REPLACEMENT

1. Relieve fuel pressure between the engine and the manual shut-off valve (see **FUEL PRESSURE RELIEVING**).
2. Remove the cowl cover and under-cowl panel, refer to the **COWL COVER REPLACEMENT** .
3. Remove the fuel feed hose (A).

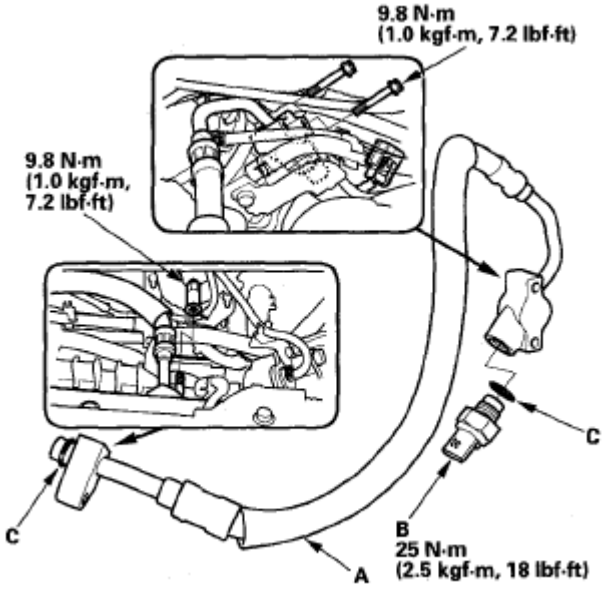


Fig. 95: Identifying Fuel Feed Hose, Fuel Rail Pressure Sensor With Torque Specifications

4. Remove the fuel rail pressure sensor (B).
5. Apply silicone oil or polyalkyleneglycol (PAG) oil to a new O-ring (C) and carefully install it into its proper position (see **FUEL TANK SCRAPPING**).
6. Install the parts in the reverse order of removal.
7. Do the leak inspection procedure (see **LEAK INSPECTION**).

FUEL TEMPERATURE SENSOR REPLACEMENT

1. Relieve fuel pressure between the engine and the manual shut-off valve (see **FUEL PRESSURE RELIEVING**).
2. Remove the cowl cover and under-cowl panel, refer to the **COWL COVER REPLACEMENT** .
3. Disconnect the fuel temperature sensor connector (A).

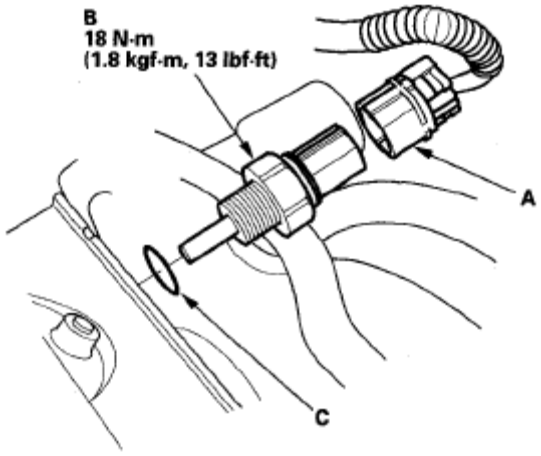


Fig. 96: Identifying Fuel Temperature Sensor Connector, Fuel Temperature Sensor And O-Ring

4. Remove the fuel temperature sensor (B).
5. Apply silicone oil or polyalkyleneglycol (PAG) oil to a new O-ring (C) and carefully install it into its proper position (see **FUEL TANK SCRAPPING**).
6. Install the parts in the reverse order of removal.
7. Do the leak inspection procedure (see **LEAK INSPECTION**).

INJECTOR CONTROL MODULE REPLACEMENT

1. Remove the passenger's dashboard undercover, refer to the **PASSENGER'S DASHBOARD UNDERCOVER REMOVAL/INSTALLATION** .
2. Remove the right kick panel, refer to the **TRIM REMOVAL/INSTALLATION - PILLAR AREAS** .
3. Disconnect the injector control module connector (A).

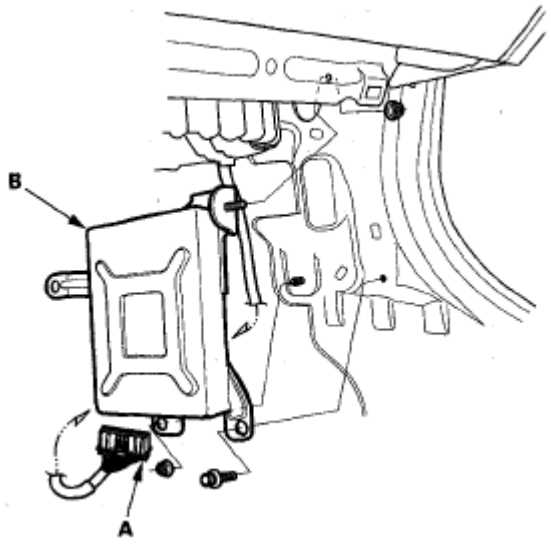


Fig. 97: Identifying Injector Control Module And Injector Control Module Connector

4. Remove the injector control module (B).
5. Install the parts in the reverse order of removal.

MANUAL SHUT-OFF VALVE REPLACEMENT

1. Relieve fuel pressure between the engine and the fuel tank (see **FUEL PRESSURE RELIEVING**).
2. Lift the vehicle, and support it with jackstands.
3. Remove the under-floor cover (A).

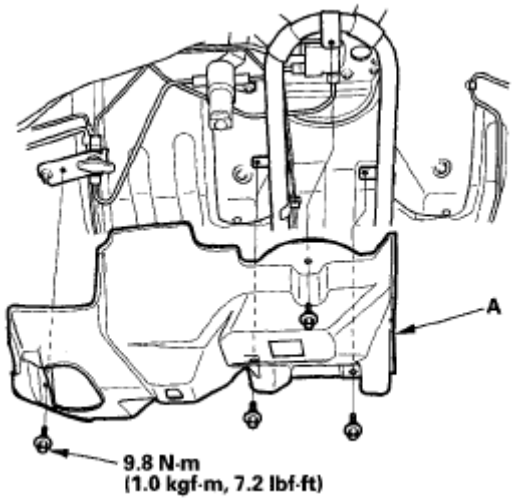


Fig. 98: Identifying Under-Floor Cover With Torque Specifications

4. Disconnect the fuel lines (A).

NOTE: Always use two wrenches when removing or installing the fuel line nuts (see FUEL LINE INSPECTION).

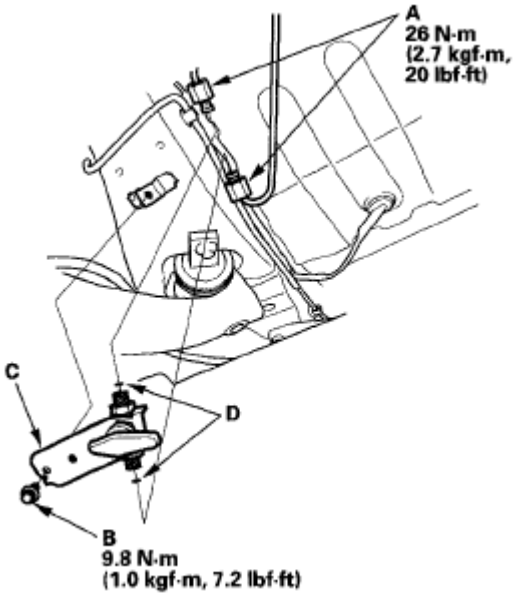


Fig. 99: Identifying Manual Shut-Off Valve, Fuel Lines, O-Rings With With Torque Specifications

5. Remove the bolt (B) and the manual shut-off valve (C).

6. Apply silicone grease (PARKER CHRISTO-LUBE) to the new O-rings (D) and carefully install them into their proper positions (see **FUEL TANK SCRAPPING**).
7. Install the parts in the reverse order of removal.
8. Do the leak inspection procedure (see **LEAK INSPECTION**).

FUEL RECEPTACLE REPLACEMENT

1. Relieve fuel pressure between the fuel receptacle and the fuel tank (see **BETWEEN THE FUEL RECEPTACLE AND THE FUEL TANK**).
2. Remove the fuel pipe protector, refer to **FUEL PIPE PROTECTOR REPLACEMENT** .
3. Remove the bolts (A).

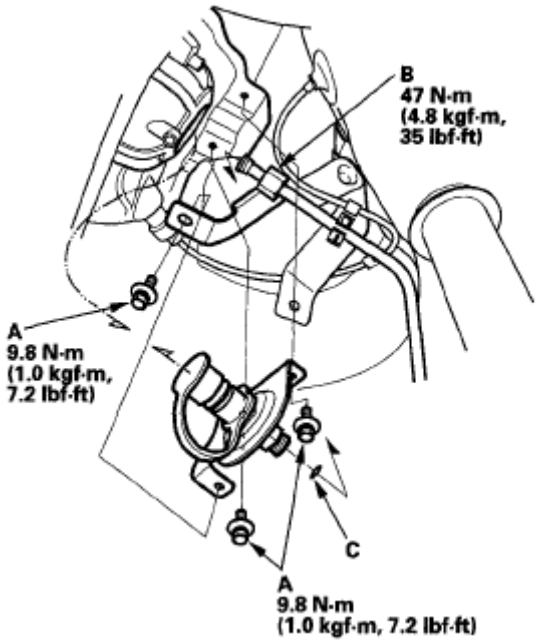


Fig. 100: Identifying Fuel Fill Pipe, Bolts With Torque Specifications

4. Remove the fuel fill pipe (B).

NOTE: Always use two wrenches when removing or installing the fuel pipe nut (see FUEL LINE INSPECTION).

5. Apply silicone grease (PARKER CHRISTO-LUBE) to a new O-ring (C), and carefully install it into its proper position (see **FUEL TANK SCRAPPING**).
6. Install the parts in the reverse order of removal.
7. Do the leak inspection procedure (see **LEAK INSPECTION**).

FUEL FILTER A ELEMENT REPLACEMENT

WARNING: Compressed natural gas is flammable and highly explosive. You could be killed or seriously injured if leaking natural gas is ignited.
Stop the engine, and keep heat, sparks and flames away.

1. Relieve fuel pressure between the engine and the manual shut-off valve (see **FUEL PRESSURE RELIEVING**).
2. Lift the vehicle, and support it with jackstands.
3. Remove the under-floor cover (see step 3 on page 11-147).
4. Remove the fuel filter A housing (A), and replace the fuel filter A element (B).

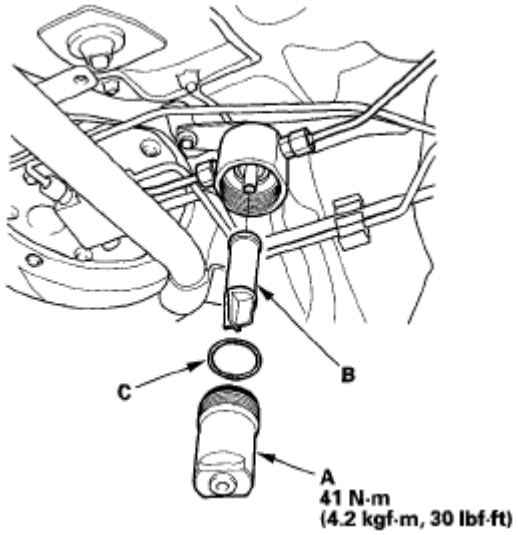


Fig. 101: Identifying Fuel Filter A Housing, Fuel Filter A Element And O-Ring

5. Apply silicone grease (PARKER CHRISTO-LUBE) to a new O-ring (C) and

carefully install it into its proper position (see **FUEL TANK SCRAPPING**).

6. Install the parts in the reverse order of removal.
7. Do the leak inspection procedure (see **LEAK INSPECTION**).

FUEL FILTER A REPLACEMENT

WARNING: Compressed natural gas is flammable and highly explosive. You could be killed or seriously injured if leaking natural gas is ignited.
Stop the engine, and keep heat, sparks and flames away.

1. Relieve fuel pressure between the engine and the manual shut-off valve (see **FUEL PRESSURE RELIEVING**).
2. Lift the vehicle, and support it with jackstands.
3. Remove the under-floor cover (see step 3 on page 11-147).
4. Remove the fuel lines (B), stay (C), and bolts (D). Replace fuel filter A. Make sure the arrow is pointing towards the engine.

NOTE: Always use two wrenches when removing or installing fuel line nuts (see FUEL LINE INSPECTION).

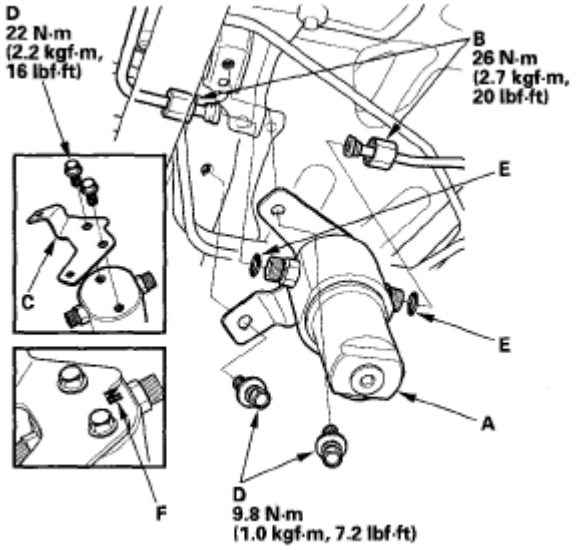


Fig. 102: Exploded View Of Fuel Filter

5. Apply silicone grease (PARKER CHRISTO-LUBE) to the new O-rings (E), and carefully install them into their proper positions (see **FUEL TANK SCRAPPING**).
6. Install the parts in the reverse order of removal.

NOTE: When assembling the stay and fuel filter A, make sure to assembly them that the "IN" mark (F) is visible.

7. Do the leak inspection procedure (see **LEAK INSPECTION**).

FUEL FILTER B ELEMENT REPLACEMENT

WARNING: Compressed natural gas is flammable and highly explosive. You could be killed or seriously injured if leaking natural gas is ignited.
Stop the engine, and keep heat, sparks, and flames away.

1. Relieve fuel pressure between the engine and the manual shut-off valve (see **FUEL PRESSURE RELIEVING**).
2. Lift the vehicle, and support it with jackstands.
3. Remove the fuel filter B housing (A), and replace the fuel filter B element (B).

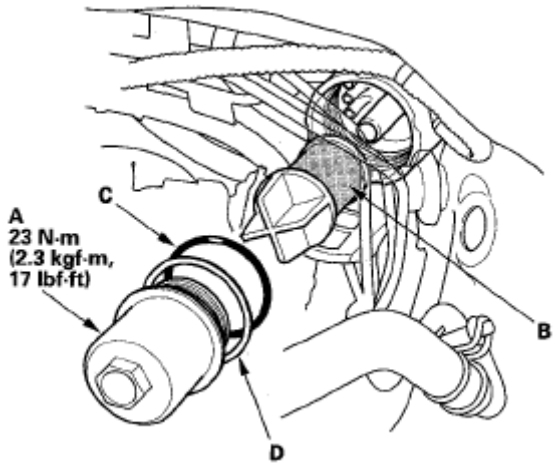


Fig. 103: Identifying Fuel Filter B Housing, Element And O-Ring

4. Apply silicone grease (Shinetsu silicone GR 10M) to a new O-ring (C) and carefully install it into its proper position (see **FUEL TANK SCRAPPING**).
5. Install the parts in the reverse order of removal.

NOTE: If the fuel filter B housing is rusty or damaged, replace the fuel filter B housing and seal (D).

6. Do the leak inspection procedure (see **LEAK INSPECTION**).

FUEL JOINT BLOCK REPLACEMENT

WARNING: Compressed natural gas is flammable and highly explosive. You could be killed or seriously injured if leaking natural gas is ignited.
Stop the engine, and keep heat, sparks, and flames away.

1. Remove the fuel tank (see **FUEL TANK REMOVAL/INSTALLATION**).
2. Remove the fuel pipe duct (A), then remove the fuel pipes (B) from the fuel tank, and disconnect the connector (C).

NOTE: Always use two wrenches when removing or installing fuel pipe nuts (see FUEL LINE INSPECTION).

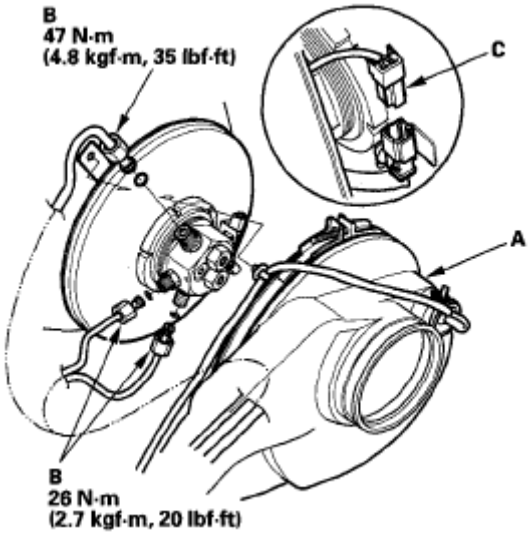


Fig. 104: Identifying Fuel Pipe Duct, Connector, Fuel Pipes With Torque Specifications

3. Remove the fuel joint duct (A), and the fuel pipes (B).

NOTE: Always use two wrenches when removing or installing the fuel pipe nuts (see FUEL LINE INSPECTION).

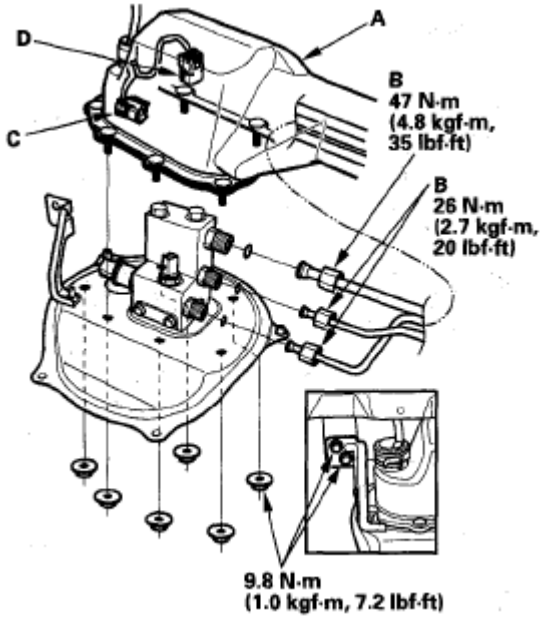


Fig. 105: Exploded View Of Fuel Joint Block With Torque Specifications

4. Disconnect the FTP sensor connector (C) and the FTT sensor connector (D).
5. Remove the connectors (A).

NOTE: Always use two wrenches when removing or installing fuel pipe nuts (see FUEL LINE INSPECTION).

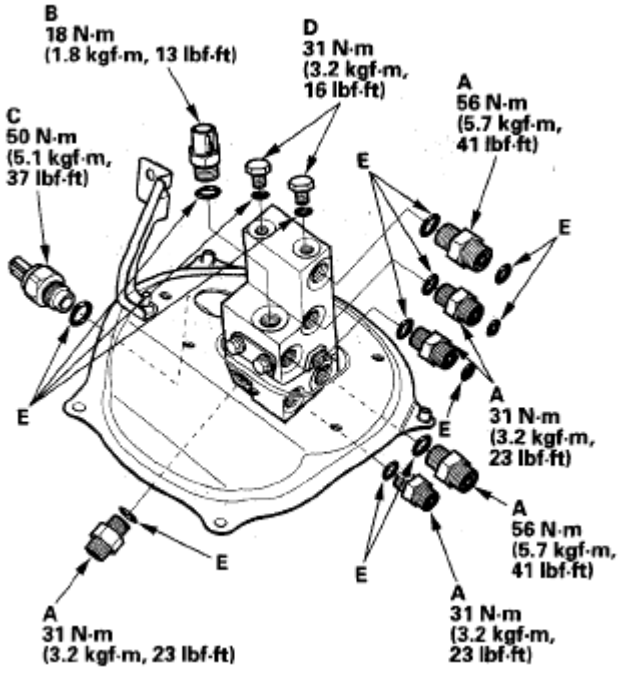


Fig. 106: Exploded View Of FTT And FTP Sensor With Torque Specifications

6. Remove the FTT sensor (B), the FTP sensor (C), and the bolts (D).
7. Apply silicone oil or polyalkyleneglycol (PAG) oil to the new O-rings (E), and carefully install them into their proper positions (see **FUEL TANK SCRAPPING**).
8. Install the parts in the reverse order of removal.
9. Do the leak inspection procedure (see **LEAK INSPECTION**).

FTP SENSOR REPLACEMENT

1. Remove the fuel joint block (see **FUEL JOINT BLOCK REPLACEMENT**).
2. Remove the FTP sensor (A).

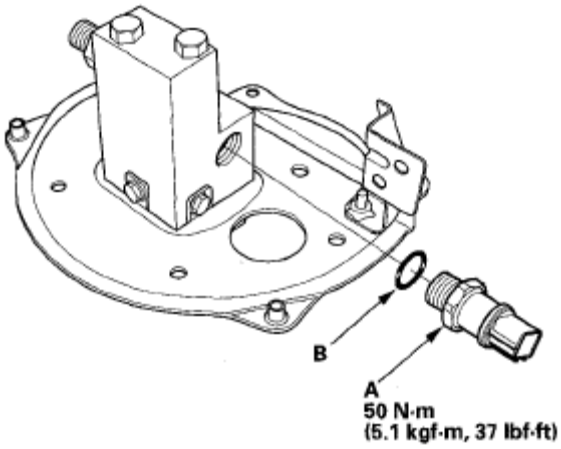


Fig. 107: Identifying FTP Sensor And O-Ring

3. Apply silicone oil or polyalkyleneglycol (PAG) oil to a new O-ring (B) and carefully install it into its proper position (see **FUEL TANK SCRAPPING**).
4. Install the parts in the reverse order of removal.
5. Do the leak inspection procedure (see **LEAK INSPECTION**).

FTT SENSOR REPLACEMENT

1. Remove the fuel joint block (see **FUEL JOINT BLOCK REPLACEMENT**).
2. Remove the FTT sensor (A).

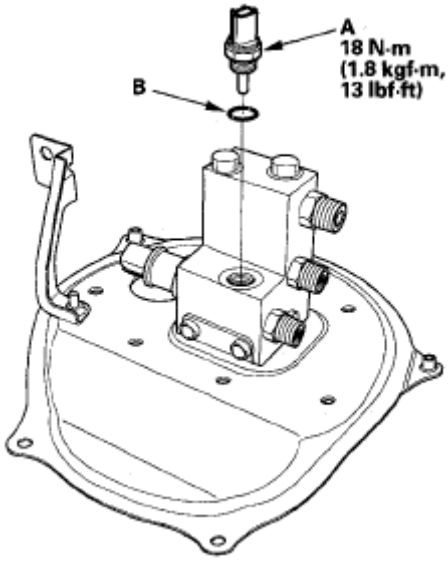


Fig. 108: Identifying FTT Sensor And O-Ring

3. Apply silicone oil or polyalkyleneglycol (PAG) oil to a new O-ring (B) and carefully install it into its proper position (see **FUEL TANK SCRAPPING**).
4. Install the parts in the reverse order of removal.
5. Do the leak inspection procedure (see **LEAK INSPECTION**).

FUEL TANK REMOVAL/INSTALLATION

WARNING: Compressed natural gas is flammable and highly explosive. You could be killed or seriously injured if leaking natural gas is ignited.
Stop the engine, and keep heat, sparks, and flames away.

NOTE:

- **You must be an SCI-certified technician to do fuel tank inspection or replacement work.**
- **This procedure degrades the integrity of the fuel tank. If you do it, do not reinstall the original fuel tank. Install a new one.**
- **Wear gloves while handing the fuel tank.**

REMOVAL/INSTALLATION

1. Relieve fuel pressure between the engine and the fuel tank (see **FUEL PRESSURE RELIEVING**).
2. Lift the vehicle, and support it with jackstands.
3. Remove the under-floor cover (A).

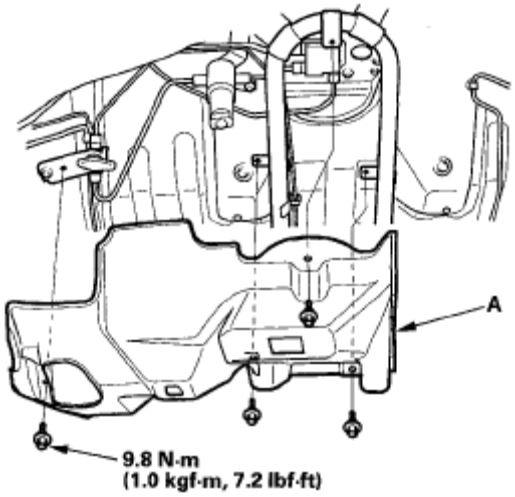


Fig. 109: Identifying Under-Floor Cover With Torque Specifications

4. Remove the three fuel pipes (A) at the fuel joint block (B) and the two fuel joint block mounting bolts (C).

NOTE:

- **Always use two wrenches when removing or installing fuel pipe nuts (see FUEL LINE INSPECTION).**
- **Apply silicone oil or polyalkyleneglycol (PAG) oil to a new O-ring (D) and carefully install it into its proper position (see FUEL TANK SCRAPPING).**

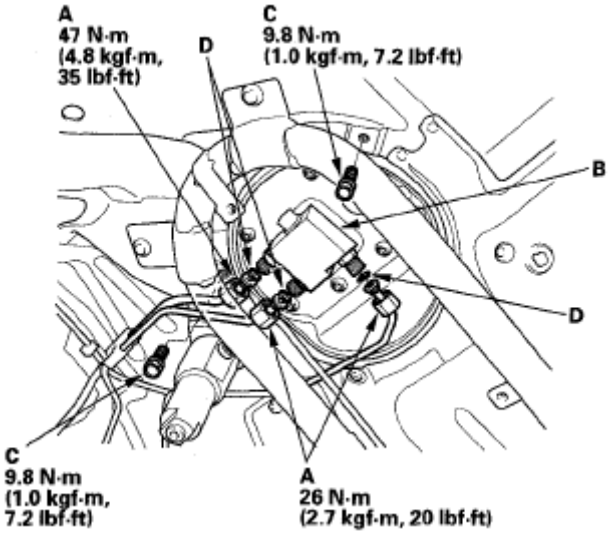


Fig. 110: Identifying Fuel Pipes, Fuel Joint Block With Mounting Bolts Torque Specifications

5. Lower the vehicle. Remove the left-rear door, refer to the **REAR DOOR PANEL REMOVAL/INSTALLATION** , then disconnect the connector (A).

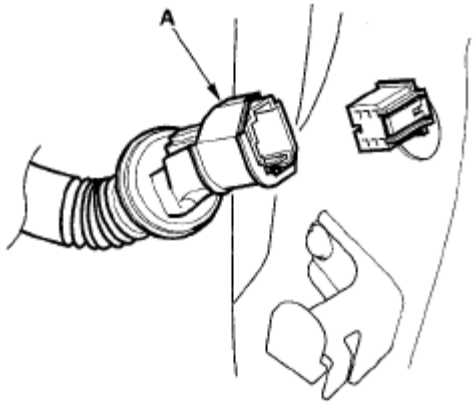


Fig. 111: Identifying Connector

6. Remove the rear seat (see **REAR SEAT REMOVAL/INSTALLATION**).
7. Remove the rear seat belt, refer to the **REAR SEAT BELT REPLACEMENT** .
8. Remove the rear pillar trim, refer to the **TRIM REMOVAL/INSTALLATION - PILLAR AREAS** .
9. Remove the rear shelf (see **TRIM REMOVAL/INSTALLATION - REAR SHELF AREA**) and the trunk floor lid (see **TRIM REMOVAL/INSTALLATION - TRUNK AREA**).
10. Remove the trunk partition (see **TRIM REMOVAL/INSTALLATION - TRUNK AREA**).
11. Remove the gussets (A).

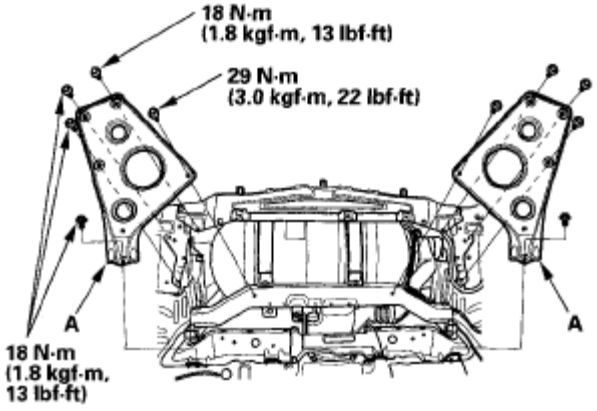


Fig. 112: Identifying Gussets With Torque Specifications

12. Remove the harness clip (A) and the rear parcel cover (B).

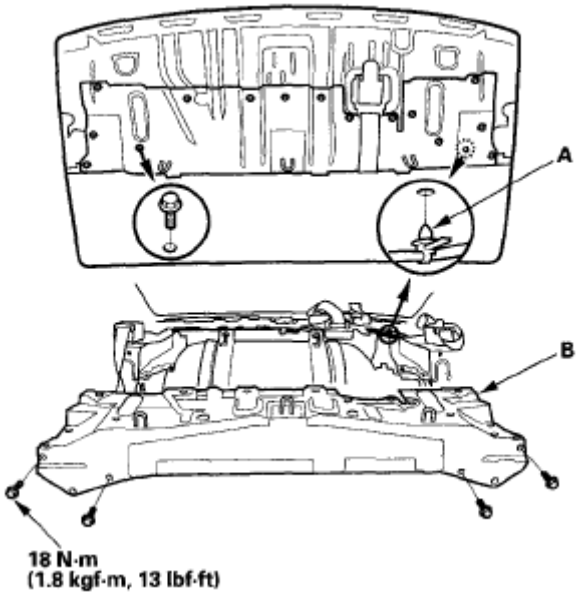


Fig. 113: Identifying Harness Clip, Rear Parcel Cover With Torque Specifications

13. Remove the harness clip (A) and the rear shelf gussets (B).

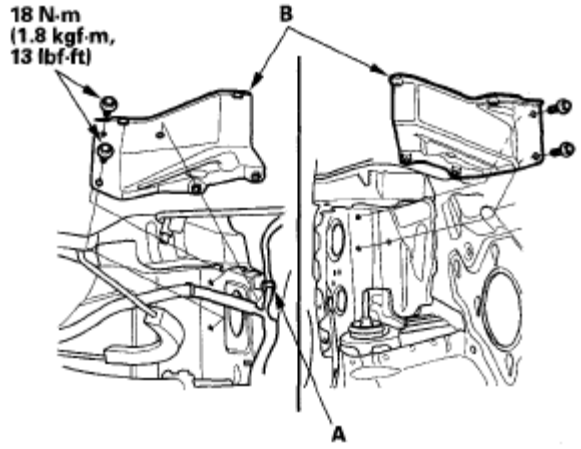


Fig. 114: Identifying Harness Clip, Rear Shelf Gussets With Torque Specifications

14. Remove the rear floor upper cross-member gusset, refer to the **REAR FLOOR UPPER CROSS-MEMBER GUSSET REPLACEMENT** .
15. Remove the bolts (A).

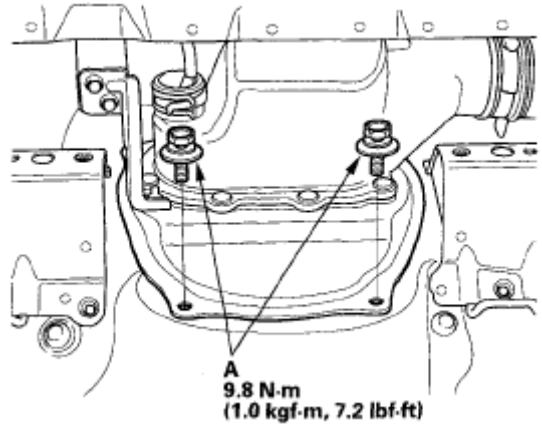


Fig. 115: Identifying Bolts Torque Specifications

16. Disconnect the vent hose (A) from the fuel tank (B).

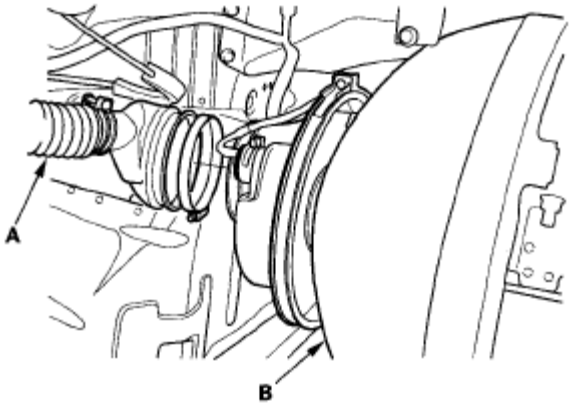


Fig. 116: Identifying Vent Hose And Fuel Tank

17. Remove the tank frame mounting bolts (A).

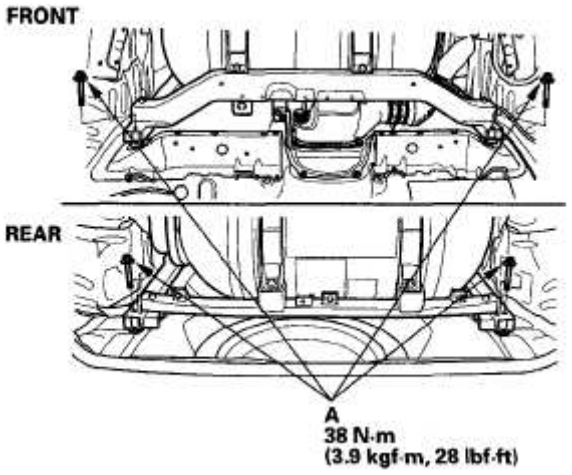


Fig. 117: Identifying Tank Frame Mounting Bolts Torque Specifications

18. Push the front seats forward, then cover the seats and floor with a tarp or similar material.
19. With the help of two other technicians, lift the frame, and slide the entire fuel tank assembly (A) into the passenger compartment. Be careful not to damage the fuel joint block.

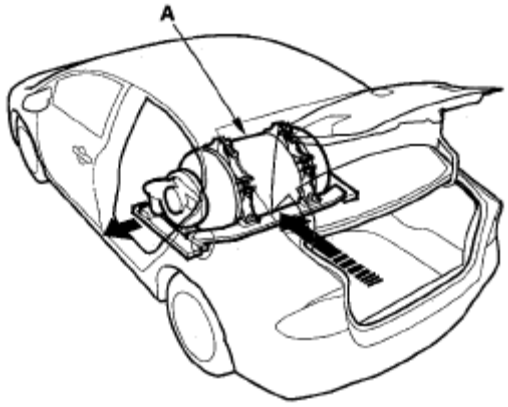


Fig. 118: Sliding Entire Fuel Tank Assembly

20. Rotate the fuel tank so the fuel joint block and the frame can clear the door opening, then carefully remove the fuel tank assembly from the vehicle.
21. Install the new fuel tank assembly in the reverse order of removal.

NOTE: Do this when you install the left rear door:

- **Tighten the door checker mounting bolt, refer to the REAR DOOR WEATHERSTRIP REPLACEMENT .**
- **Adjust the door position, refer to the FRONT AND REAR DOOR POSITION ADJUSTMENT .**

22. Open the manual look-down valves on the new tank. (New tank come with these valves closed).
23. Do the leak inspection procedure (see **LEAK INSPECTION**).

FILL PROCEDURE

If a tank has less than 690±340 kPa (7.0±3.5 kgf/cm^2 , 100±50 psi) of internal pressure and is at an ambient temperature of 32 °F (0 °C) or less, follow the procedure below. Otherwise, fill the tank normally.

1. Fill the fuel tank to 4,800±340 kPa (49.2±3.5 kgf/cm^2 , 700±50 psi) slowly (from a compressor, not from a cascade storage system).
2. Wait 1 hour.

3. Fill the rest of the tank normally.